A REPERTORY GRID ANALYSIS OF THE EFFECT OF LANGUAGE ON SCHIZOPHRENIC THOUGHT DISORDER

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by
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Ten thought-disordered schizophrenics and ten control subjects were assessed by the use of repertory grid and clinical indices of thought disorder in both their home language and a second language. Performance of schizophrenics was on the whole poorer in the home language, while control subjects did not perform significantly differently in the two languages. The results were seen to support Bannister's serial invalidation hypothesis concerning schizophrenic thought disorder and to have some implications for clinical assessment and treatment with regard to the language medium in which they are conducted.

Introduction

Thought disorder, one of the major symptoms of schizophrenia, has been the focus of much theorizing; and a variety of hypotheses has been advanced to account for its nature and development (Maher, 1966). The serial invalidation hypothesis of Bannister (1963) is one such approach which is receiving much attention in the field of research.

Bannister's work has been carried out within the paradigm generated by G.A. Kelly's Personal Construct Theory (Kelly, 1955). Personal constructs are the ways in which a person makes predictions about his world and consequently the ways by which his life is structured and his behaviour defined. In order to make an individual's construct system and directions for change within this more explicit, Kelly evolved the technique, amongst others, of the role construct repertory grid. The major assumption underlying the use of grids is that the psychological relationship between any two constructs for a particular subject is reflected in the degree of

statistical association between them when they are used as sorting categories by the subject.

One of the major areas of research using repertory grid techniques has concerned schizophrenic thought disorder. Bannister and his colleagues have done numerous grid studies to elucidate the nature of thought disorder, its genesis, issues relating to differential diagnosis and "corrective" psychotherapy. Thought disorder in schizophrenia is seen to comprise loosened construing. It is hypothesized that through invalidation, i.e. disconfirmation, constructs, i.e. predictions, become rather random in order to obviate being wrong. This has been shown to be true of thought-disordered schizophrenics (Bannister and Fransella, 1966).

Thought disorder has mainly been measured linguistically as language is the main operational measure of thought possible. The connection between language and thought is the subject of much theoretical controversy. With Bannister's English form of the grid translated into Afrikaans (McLaren and Beumont, 1973), it is possible to ascertain, with bilingual subjects, to what extent thought disorder is language-tied.

Such an evaluation would also aid speculations concerning the various hypotheses advanced to account for thought disorder, particularly the serial invalidation hypothesis, by comparison of the language of supposed invalidation with a second language. Qualitative analysis of elicited constructs is also proposed to further examine these hypotheses.

It is also proposed to further validate Bannister's grid techniques, from within his paradigm, by comparison of the standardized grid with a more personalized elicited grid, and from without, against clinical criteria.

The major hypotheses are that schizophrenics are significantly more thought-disordered in their home language than in a second language as measured by the Bannister-Fransella grid;

that this distinction is borne out by the use of elicited grids and clinical ratings; that such a distinction does not exist for normal control subjects; that elicited constructs are not significantly less abstract but are significantly less psychological in the second language for schizophrenics but not controls; and that language proficiency alone does not account for the results.

Method

Ten thought-disordered schizophrenics and ten roughly matched control subjects, all somewhat bilingual with respect to English and Afrikaans, were assessed in both languages on the South African Wechsler-Bellevue vocabulary subtest, the Bannister-Fransella Grid Test of Schizophrenic Thought Disorder and an elicited repertory grid. Taped samples of talk were obtained from the schizophrenic subjects in the two languages.

The vocabulary subtest and the B-F grid were scored in the usual way. The elicited grid was scored as the B-F grid. The elicited constructs were categorized as to whether they were abstract or concrete, and psychological or descriptive. The taped data was rated for presence of thought disorder in terms of clinical criteria.

Results

Analyses of variance showed that the schizophrenic subjects were significantly less thought-disordered in their second language than in their first language according to the Intensity scores on the B-F grid. The trend for the Consistency scores was in a similar direction, although not significantly so. This language distinction was borne out by the use of clinical ratings, as assessed by the Wilcoxon Matched-Pairs Signed-Ranks Test, but not by the use of elicited grid techniques.

Control subjects, as predicted, did not perform significantly differently in the two languages on the B-F or elicited grids.

The hypotheses concerning qualitative aspects of the elicited constructs were not borne out and certain methodological problems were advanced to partly account for this finding.

Language proficiency alone was not found to be responsible for the obtained performances, as assessed by analyses of covariance.

Discussion

The results were seen to give some support to Bannister's interpretation of the development of schizophrenic thought disorder in that performance of schizophrenics was on the whole poorer in the home language, i.e. the language of invalidation. The other hypotheses concerning thought disorder were also evaluated in terms of the results and tentative support for a few discussed.

Further implications of the results were also discussed. The fact that a disorder of thinking manifests itself differentially in two languages was seen to indicate a lack of identity between thought and language and to support the views of those theorists who see the relationship between the two as being a highly complex one. It was also pointed out that in order to prevent some symptoms from eluding observation, clinical assessments should be done in the home language of the testee rather than the tester. As a result of disorder being less manifest in a minor language, it was proposed that use of this medium might prove beneficial in rehabilitative and psychotherapeutic endeavours.

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INTRODUCTION

1. The Concept of Schizophrenic Thought Disorder and Related Hypotheses

> As long as no known physical pathology of schizophrenia exists, the psychology of the disease must be of primary importance even to those who ... believe that it has a physical cause. Psychological symptoms are at present the basis of our diagnosis and therapeutic action and any theory of the illness has to be founded on its psychopathology.
>
> (Mayer-Gross, Slater and Roth, 1969, p.264.)

The "essential psychological abnormalities" found in schizophrenia, according to the above authors, are disturbance of thinking, disturbance of emotions, disturbance of volition, catatonic symptoms, primary delusions and hallucinations. Although these symptoms may not always be present concurrently, it is apparent that cognitive disorder is recognized as central to the manifestation of at least some forms of schizophrenia.

Bannister (1960) quotes the above authors' analysis of the primary characteristics of the talk, the measurable correlate of thinking, of thought-disordered schizophrenics. It comprises the following features: form of thought:

(a) Inconsequential following of side issues.
(b) Tendencies for the thought to be directed by alliterations, analogies, clang associations, associations with accidents of the speaker's environment, symbolic meanings, and the condensation of several (perhaps mutually contradictory) ideas into one.
(c) Words used out of context, e.g. concrete meanings where abstract meanings would be more appropriate.
(d) Clinging to unimportant detail.
(e) The use of laconic answers, e.g. I don't know - indicative of emptiness and vagueness of ideas.

(f) Thought generally marked by gaps, poverty, indefiniteness and vagueness.
(g) Indications of thought-blocking.
(h) Indications of pressure of thoughts.

This then is an operational definition of the "gibberish" spoken by some psychiatric patients, the abnormalities of form of thought, rather than content, as seen in delusions, etc.

There have been many approaches to elucidating the phenomenon outlined above, all striving to point to the aetiology of the disturbance.

Bannister (ibid.) has summarized such attempts under four categories - Kretschmer's "dissociation", Babcock's "deterioration in mental efficiency", Goldstein's "concretism", and Payne's "over-inclusion".

Maher (1966) covers the hypotheses associated with schizophrenic thought disorder and reviews the research done on these in some detail.

1. The Regression Hypothesis

Here schizophrenic thought disorder is seen as a regression to a more primitive or childish level of thinking. Gardner (1931) was the proponent of such a standpoint. Such a point of view has not been borne out by research. Cameron (1938 a and b, 1939, 1944) showed that the verbal responses of children and psychotic adults are not similar. Pascal and Suttell (1951) and Suttell and Pascal (1952), using the Bender-Gestalt, found that regression is not peculiar to schizophrenia. Ellsworth (1951), however, did find a similarity in the way children and adult schizophrenics used parts of speech. In reviewing this research, Maher (op. cit.) states that to prove that one group (e.g. schizophrenics) is as incompetent as another (e.g. children) in a particular field (e.g. language),

is not to justify the assumption that the underlying processes in both groups' performances are the same. This hypothesis has not proved useful clinically.

2. Cameron's Hypothesis

According to this point of view schizophrenic thought disorder is characterized by:

(a) Asyndesis - lack of connectives.
(b) Metonymy - lack of precise definition.
(c) Fragmentation - thought-blocking.
(d) Interpenetration - intrusion of fantasy into communication.
(e) Overinclusion - inability to exclude irrelevancies.

The majority of the research done within Cameron's framework has been conducted by Payne and his associates on overinclusion. This they regarded as part of a general attention defect, a breakdown of the "cerebral filter mechanism".

Payne and Friedlander (1962) developed a short battery of simple tests for measuring overinclusion:

(a) The object classification test - involving sorting according to relevant or irrelevant details.
(b) The proverbs test - sorted according to the number of words used, i.e. extensiveness.
(c) The Goldstein object sorting test - scored according to the number of objects in each sort.

The authors obtained some good results in differentiating groups especially acute schizophrenics. However, their work has come under fire from various sources with regard to their methodology and the validity of their claims. Foulds et al (1967a) conclude their analysis of the measurements thus:

> Whatever these tests measure it is not those factors which lead clinicians to judge patients as suffering from thought process disorder (p. 1365).

3. Chapman's Hypothesis

This hypothesis is concerned with the errors considered central to schizophrenic thinking, i.e.

(a) The intrusion of associations into conceptual performance.
(b) Overinclusive interpretation of common concepts so as to incorporate incorrect items that are in some respect similar to the correct ones.
(c) Confusions between literal and figurative uses of language.
(d) The solution of formal syllogisms by inferring an identity of objects that share a common quality.

These examples of defective social communication are instances of response bias - the predilection for giving a particular kind of wrong answer when the cues for the production of the correct answer are minimal. An example of this is the tendency to produce a strong meaning response even when the context calls for a weak one. The hypothesis states that this is characteristic of the schizophrenic's behaviour.

There is experimental support for this hypothesis. The authors go on to maintain that this hypothesis may subsume the abstract-concrete dimension (see below) in that the patient will use the strongest meaning whether or not it be concrete or abstract.

4. The Concrete-Abstract Hypothesis

Goldstein and Scheerer (1941) discuss the concrete attitude - one not mediated by discursive reasoning - and the abstract attitude - involving reasoning, awareness and self-account. The authors maintain that in an abnormal individual (e.g. a schizophrenic patient) there is an impairment of the abstract attitude so that the concrete attitude attains "an abnormal predominance" and lacks the control usually exercised over it by the higher level. According to Maher, the main aim in the

studies within this framework has been to investigate whether or not schizophrenic patients are "capable of arriving at conceptual bases for grouping objects together".

Although this hypothesis enjoyed much early popularity, it has of late fallen into disrepute. According to Cameron, schizophrenic patients are capable of abstract reasoning - their main difficulty lies in establishing rapport, and this obscures the issue by rendering their level of reasoning difficult to ascertain. The McGaughran - Moran studies (McGaughran and Moran, 1956) which classified patients' concepts supported Cameron's claims.

5. Mednick's Hypothesis

Here the patient, in the incipient stage, is seen as in a state of anxiety which provides the motivation for raising the generalization gradient to threatening stimuli. This results in a greater number of anxiety-provoking stimuli, resulting in more anxiety. The entire process spirals and leads to the inclusion of irrelevant stimuli. During the transitional stage, the stimuli become more and more irrelevant; and some stimuli, previously anxiety-reducing, are included with a concomitant reduction in anxiety and consequent reinforcement of the responses. In this way irrelevant responses become habitual. To bolster his argument that schizophrenics are high in anxiety, Mednick has pointed to similarities with individuals suffering from high anxiety - e.g. the ability to more easily acquire a conditioned response, the exhibition of greater stimulus generalization responsiveness and the difficulty with complex tasks due to interference.

There is some experimental support for the fact that high anxiety stimuli produce remoter associations with schizophrenic patients than low-anxiety stimuli (Woods, 1961).

6. Van Domarus's Principle

The definition of schizophrenic thought disorder here is in terms of certain kinds of logical error which are termed paralogical. According to Van Domarus: - whereas the logician accepts identity only on the basis of identical subjects, the paralogician accepts identity based upon identical predicates. Arieti (in Zax and Stricker, 1969) has revised this principle to read: - whereas the normal person accepts identity ... the paleologician (i.e. primitive logician) accepts identity ... Another variation is that of Nims (1959) who maintained that the schizophrenic error is synonymous with the fallacy of the undistributed middle.

The type of example of such error used by researchers has been the invalid syllogism.

Maher feels that his hypothesis is explained by stimulus generalization. According to him:

> What makes this generalization pathological is that it is being elicited by a degree of similarity that would be too small to elicit it in the normal subject (p. 427).

In this way the pathological process is similar to the process of overinclusion referred to previously.

Most research, including a well-controlled study by Williams (1964), has shown that this type of error is not peculiar to schizophrenics, or more frequent amongst the members of such a group. What behaviour this hypothesis does describe is covered more parsimoniously by the stimulus generalization hypothesis, according to Maher.

7. The Organic Hypothesis

Some workers in the field have studied the similarities

between the psychopathology of schizophrenia and the behavioural consequences of brain pathology.

One of the considered similarities is that of using metaphorical statements in a literal or concrete manner. A study by Chapman (1960) showed that schizophrenic and brain-injured patients did not make similar errors in this respect.

Stronger claims for the similarity of the two groups have arisen out of the abstract-concrete research. Studies such as that of McGaughran and Moran (1957) have shown that the perceived similarities actually mask complex differentiations.

Another approach to this hypothesis has been, not to stress the similarities between the two conditions, but to speak of a more direct relationship. The concept to be inferred from this approach is that organic brain pathology is aetiologically prior to schizophrenia. A few papers written within this framework will be mentioned.

Handford (1975) describes the development from hypoxia around birth to minimal brain dysfunction and later schizophrenia. He quotes Stevens (1973) as speaking of the "pathological widening of consciousness" in schizophrenia being caused by an excess of or an increased sensitivity to Dopamine, released as a result of cerebral damage in the corpus striatum. There have been consistent EEG findings.

Ounsted (1973) spoke of the aura of epilepsy of the lymbic systems presenting a microcosm of psychotic symptoms. He maintained that temporal lobe epilepsy does occasionally develop into psychoses and that the nature and chronicity of the psychoses are dependent on the chronicity and laterality of the lesion. According to his analysis, schizophrenia develops from epilepsy of the left temporal lobe, while depressive psychoses develop from epilepsy of the right temporal lobe. In addition, an early onset is associated with schizophrenia and a later onset with depression. Although not dealing directly with

thought disorder, this is an example of the organic line of thinking.

Such work is in need of much validation and replication.

8. Social Content and Thinking Hypothesis

This hypothesis concerns the idea that schizophrenics are differentially sensitive to social stimuli which are presumed to arouse anxiety and disruptive responses. Experimentation has been done by the use of sorting tasks where social- and non-social-content items have been used. There is some support for this, for example, a study by Bannister and Salmon (1966).

9. Bannister's Analysis

This approach, dependent on Kelly's Personal Construct Theory and the later development of the repertory grid, will be discussed in detail below. Thus it will receive only a cursory examination here. Bannister has evolved the serial invalidation hypothesis to account for schizophrenic thought disorder. As a result of invalidation, the patient's constructs are "loosened". This is a description of the schizophrenic process. Bannister maintains that the schizophrenic condition only has been dealt with in other approaches. His approach is therefore a dynamic one. It advances a causal hypothesis, whereas, for the most part, the other hypotheses are descriptive in nature, rather than explanatory or aetiological. Bannister and his associates have experimentally demonstrated looseness in thought-disordered schizophrenics as opposed to other psychiatric groups, including non-thought-disordered schizophrenics and normals. He has also attempted to induce this in normals by the process of serial invalidation. This latter attempt was not wholly sucessful. This approach has something in common with Bateson's description of the double bind situation (Bateson et al., 1956), Lidz's elucidation of the transmission of irrationality in the family (Lidz, 1958), and Laing and

Esterson's analyses (Laing and Esterson, 1964) of mystification by forms of family praxis and process.

According to Maher's review of the above hypotheses, few facts are borne out by experimental research. However, those factors which stand reasonably strongly at this stage of our knowledge are that schizophrenic thought and language are characterized by defective social communication (Chapman), the inclusion of irrelevant associations due to some process of stimulus generalization and defective inhibition (Mednick), and loosened construing (Bannister), together with some organic factors. Bannister's idea of loose contruing involves the conception of schizophrenics as being defective in social perceptions and thus in social communication. His idea of serial invalidation also possibly involves if not some type of stimulus generalization then at least some reinforcement principles. In addition, Bannister's point of view does not rule out any physiological or genetic, i.e. organic, hypothesis, being merely an hypothesis as to the psychological stress conditions which might obtain in order for any possible physiological predisposition to manifest itself. Thus, involving as it does, some of the more "scientifically" validated factors concerning the psychological symptom of schizophrenic thought disorder, it seems a likely vantage point for an investigation of this area of psychopathology.

2. Bannister's Approach to Thought Disorder

2.1 Theoretical Underpinnings - G.A. Kelly

> In an attempt to utilize a theoretical orientation which would not only operationally define the nature of schizophrenic thinking but would generate hypotheses as to the causal factors involved and which would comment specifically on the broad behavioural manifestations of schizophrenic thought-disorder ... (my) work ... was carried out within the framework of Personal Construct theory as proposed by Kelly (1955). (Bannister, 1960.)

Bannister, as stated above, relied heavily upon the paradigm provided by G.A. Kelly. The "core constructs" of this approach are outlined in the following quote:

> The cardinal quality of personal construct theory is its recognition that psychology is man's understanding of his own understanding. By making its model 'man the scientist-psychologist' it presents us with a framework which is cousin to history and poetry, while embodying the kind of systematic attack, public definition and experimental articulation which are the universal aspects of science. It is a psychological theory which admits that values are implicit in all psychological theories and takes as its own central concern the liberation of the person. (Bannister and Fransella, 1971, p. 12.)

The above quotation alludes to Kelly's theory as one in which the principle of humanizing science is prominent; however, Kelly's great achievement was to accomplish this without sacrificing scientific ideals. He did this by addressing himself to the problem of reflexivity, or self-reference, a serious concern in psychology - the study of man by man. He was to solve this problem by viewing the activities of the

scientist and the object of his study as similar, i.e. he was to see both these "organisms" as behaving in terms of predictions which are tested against events. It was these predictive endeavours that Kelly termed personal constructs (Kelly, op. cit.). Constructs, dichotomous in nature, are the ways in which a person sees his world, the ways by which his life is structured and his behaviours defined. A construct system is the pair of goggles one constantly wears.

An important feature of the theory is that the assumptions underlying it are made explicit. The philosophical underpinnings of Kelly's system were centred in the principle of constructive alternativism elaborated by Bannister and Fransella (op. cit., p. 17) as:

> ... (W)hatever nature may be, or howsoever the quest for truth will turn out in the end, the events we face today are subject to as great a variety of constructions as our wits will enable us to contrive ... all our present perceptions are open to question and reconsideration and ... even the most obvious occurrences of everyday life might appear utterly transformed if we were inventive enough to construe them differently.

It appears that for Kelly the key-word is flexibility. One must be aware that one is limited to one's own view at a particular time and that this view need not be wholly consonant with "reality" or "truth". Thus one should be ready to see an alternative viewpoint and to change one's own ideas if necessary. This is crucial in the understanding of Kelly's approach to theory, psychotherapy, and, indeed, life in general.

The theory itself, abstract enough to avoid being limited in its applicability by e.g. time and culture, is formally stated in terms of a fundamental postulate and a number of corollaries, which, although implicit in the postulate, need further explication and emphasis. The system, taken from Kelly himself (op. cit.), and Bannister's review (1962a) is found below.

A. Fundamental Postulate

A person's processes are psychologically channelized by the ways in which he anticipates events.

This shows man to be a dynamic organism relating all events to the future, i.e. in a teleological manner. The term "psychologically" shows that we are dealing here with phenomenal reality, rather than reality as such.

B. Corollaries

1. Construction corollary

A person anticipates events by construing their replications.

Here construction implies that of a verbal, pre-verbal and physiological nature; and prediction is seen to involve the repetition of perceived similarities and differences.

2. Individuality corollary

Persons differ from each other in their construction of events.

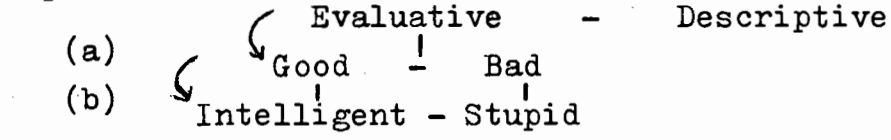
This implies that people behave differently in the "same" situation due to differences in their phenomenal worlds.

3. Organization corollary

Each person characteristically evolves for his own convenience in anticipating events, a construction system embracing ordinal relationships between constructs.

Here organization is aimed at minimizing incompatibilities and inconsistencies. This is done through the maintenance of subordinate and superordinate constructs, where subordination is

achieved either by
(a) abstraction across the cleavage line or by
(b) extending the line of cleavage.
Example:



4. Dichotomy corollary

A person's construction system is composed of a finite number of dichotomous constructs.

> ... at least three elements are required for a construct to be formed, two to supply the replicative aspect which gives rise to the similarity pole and one to supply the non-replicative aspect which is the basis of the contrast pole. All constructs are assumed to be dichotomous.
>
> (Bannister, ibid., p. 106.)

Here Kelly is assuming that x can only be meaningful where something can be labelled non-x. However, personal construct theory differs from logic in the definition of non-x. Logic has it that anything could be non-x. For example, if x were "good", non-x could be "bad"/"white"/"Tuesday"/"soccer-ball", etc. However, in the theory, non-x must be tightly connected to x in someone's construct system. For example, for some one person "good" may only be opposed to "bad", or possibly, say "unkind".

5. Choice corollary

A person chooses for himself that alternative in a dichotomised construct through which he anticipates the greater possibility for extension and definition of his system.

This means that one would choose that pole of a construct which favours the successful anticipation of events and so leads

to greater clarity and breadth in the system. The assumption of freedom and choice is also important.

6. Range corollary

A construct is convenient for the anticipation of a finite range of events only.

For example, for most of us "weather","light" and "fear" are outside the range of convenience of the construct "tall-short".

7. Experience corollary

A person's construction system varies as he successfully construes replications of events.

This means that one's working hypotheses are revised in the light of experience. This revision may be easier or more difficult according to the position of the construct in the system.

8. Modulation corollary

The variation in a person's construction system is limited by the permeability of the constructs within whose range of convenience the variants lie.

Permeability is the capacity of a construct to embrace new elements.

> The more permeable the person's superordinate constructs, the more likely he is to be able to vary subordinate aspects of his construing system without psychological collapse.
>
> (Bannister, ibid., p. 108.)

Usually change involves a shift from one pole of a construct

to another ("slot-rattling" - Kelly, in Maher, 1969, p. 231) rather than introducing a new construct - a more sophisticated and difficult approach.

9. Fragmentation corollary

A person may successfully employ a variety of construction sub-systems which are inferentially incompatible with each other.

> To know a person's low level construing and consequent behaviour today is not to be able to predict his low level construing and consequent behaviour tomorrow unless we know the superordinate construct systems which govern both.
>
> (Bannister, op. cit., p. 109.)

10. Communality corollary

To the extent that one person employs a construction of events which is similar to that employed by another, his psychological processes are similar to those of the other person.

Here it is the similarity in constructs, not in events experienced, which is important.

11. Sociality corollary

To the extent that one person construes the construction process of another he may play a role in a social process involving the other person.

Kelly, according to Bannister (ibid. p. 110), defines a role as "an ongoing pattern of behaviours that follows from a person's understanding of how the others who are associated with him in his task think". The important factor here is that one must possess constructs which subsume another's constructs,

within their range of convenience, rather than possess the same constructs. This has significance for understanding concepts such as empathy, etc., in psychotherapy.

In addition to the explication above, there are a variety of other theoretical terms to be mastered. These refer to categories of constructs.

Constructs are classified in three ways, as pre-emptive, constellatory or propositional according to the kind of control they exert over their constituent elements.

> A pre-emptive construct is a construct which pre-empts its elements for membership in its own realm exclusively. This is in effect saying that if this man is a homosexual he is nothing but a homosexual. This is a gross restricting of the elaborative possibilities of construing ... it is essentially a denial of the right of other people and ourselves to re-view, re-interpret and see in a fresh light some part of the world around us.
>
> A constellatory construct is a construct which fixes the other realm membership of its elements. This is essentially stereotyped typological thinking and says in effect that if this man is a homosexual then he must be effeminate, artistic, degenerate, (etc.).... Again it reduces our chances of elaborating or re-viewing our outlook....
>
> ... propositional constructs ... are those constructs which carry no implications regarding the other realm membership of their elements. These are 'as if' constructs where ... we are recognizing that this is only one way of viewing him and is not some final, absolute or all-comprehending truth .... The more propositional our constructs the richer becomes our world and the less likely we are to

> become irretrievably trapped into a conflict which arises out of the rigidity of our viewpoint.
>
> (Bannister and Fransella, op. cit., pp. 31-32.)

There are a number of other processes which are important. Kelly speaks of dilation - when one broadens his perceptual field in order to reorganize it on a more comprehensive level; and constriction - when one narrows his perceptual field in order to minimise apparent incompatibilities. He also speaks of tight constructs - those which lead to unvarying predictions; and loose constructs - those leading to varying predictions but nevertheless retaining their identity. This distinction becomes all-important in the development of the present thesis.

Kelly also re-defined certain key emotions in terms of his theory. This was done in the light of his opposition to a dichotomy of cognition and feeling, body and spirit, etc. An example of this is his definition of the feeling of threat - the awareness of an imminent comprehensive change in one's core construct structure.

These definitions must be understood in terms of the range of convenience of the theory - particularly clinical psychology - which involves

(a) helping people to understand the ways in which they view the world and consequently deal with it; and
(b) aiding them when necessary in re-orienting these ways, i.e. constructs, so that they can live more effectively.

On the whole clinical psychology, for Kelly, is seen in the light of his theory and its underlying philosophy of constructive alternativism. He maintains that at all time the language of hypothesis should be used. In this way a man need not reflect on what he is or what he was, which might prove very threatening, but rather is invited to imagine, <u>if</u> he were like this, what the consequences would entail.

Kelly (in Maher, op. cit., p. 206) maintains that

> ... this kind of psychology directs attention primarily to the understanding of outlooks rather than the manipulation of behaviours, and to human striving rather than transactional exchanges of service.

Thus a person is led towards construing his wants in the hope that he will thus be in a better position to match them with societal resources.

> ... the task of the therapist is to join with his client in exploring by the only means available to man - by behaviours - the implications of the constructs he has devised for understanding reality. (Kelly, ibid., p. 220.)

Kelly (ibid., p. 229) states this more explicitly:

> The psychotherapy room is a protected laboratory where hypotheses can be formulated, test-tube sized experiments can be performed, field trials planned, and outcomes evaluated.

He elaborates the ways of doing this (p. 231):

> (1) The two of them can decide that the client should reverse his position with respect to one of the more obvious reference axes. Call this slot rattling ....
> (2) Or they can select another construct from the client's ready repertory and apply it to matters at hand ....
> (3) They can make more explicit those preverbal constructs by which all of us order our lives in considerable degree. Some think of this as dredging the unconscious ....
> (4) They can elaborate the construct system to test it for internal consistency.

(5) They can test constructs for their predictive validity.
(6) They can increase the range of convenience of certain constructs, that is, apply them more generally.
(7) They can alter the meaning of certain constructs; rotate the reference axes.
(8) They can erect new reference axes. This is the most ambitious undertaking of all.

For the above undertakings to be accomplished, knowledge gained from the repertory grid technique, to be discussed below, is essential. Another method for gathering information necessary for therapy outlined by Kelly (1955) is the self-characterization sketch.

An indication of the way in which such information is used is given by a technique, elaborated by Kelly, called 'fixed-role therapy'. This can be utilized when circularity in therapy is encountered and some incitement to movement is necessary. The client is asked to draw up a fixed role sketch - a characterization of someone "psychologically at 90°" to the client. The client is then asked to be this person for a period of time.

For the construct theory approach to therapy other methods can be viewed as techniques, e.g.

> ... (one) might well include behaviour therapy methods if the patient was having difficulty in tightening his construing in a given area. (One) ... might include a psychoanalytic type of free association if the patient had difficulty in loosening his constructs (ibid., p. 132).

However:

> ... the construct theory psychotherapist would

> retain throughout the view that the client is essentially an experimental scientist in his own right, rather than someone to be manipulated by the behaviour therapist or absolved by the analyst (ibid., p. 132).

Thus, throughout, Kelly remains scientist and therapist concurrently.

> It still seems important for the psychologist to deal directly with persons on the most forthright terms possible. This is why I think of clinical psychology not as an applied field of psychology, but as a focal and essential area and method of scientific inquiry.
>
> (Kelly in Maher, 1969, p. 226)

2.2 Repertory Grid Techniques

There has been mention above of the repertory grid. This was evolved in order to make construct systems and directions for change more explicit. The grid has become the most oft-used tool within Kelly's paradigm. Together with the semantic differential, it is the method which, according to Bannister (in Mittler, 1970, p. 762) "most completely recognize(s) that it is the subject who imposes significance on his environment". As the grid is the principle method utilized in this research, it will be examined in some detail below.

Grids are forms of sorting tests. However, there is no standard administration, nor standard sorting materials or categories. These are all determined in terms of the issues under investigation reflecting the extreme flexibility of the technique.

The unique characteristics of grid methodology are
(a) that it is not the correctness of the sorts which is measured, but rather the relationship between the sorting categories or constructs; and
(b) that grids are so designed that statistical techniques usually used nomothetically can be used idiographically.

The major assumption underlying the use of grids is that the psychological relationship between any two constructs for a particular subject is reflected in the degree of statistical association between them when they are used as sorting categories by the subjects.

The grid is essentially a matrix with elements along one axis, constructs along the other, and each cell representing the intersect of the particular element and construct.

The elements are the objects to be sorted by the subject. These may consist of people known or unknown (e.g. photographs) to the subject, names of objects, lists of emotions, etc.

Originally elements were people known to the subject, obtained through the use of Kelly's Role Title List (Kelly, 1955).

The constructs are the bi-polar concepts defined within the theory (see above). These usually take the adjectival form and are used as the sorting categories. These may be supplied to the subject or elicited from him by the triadic method or by laddering.

The triadic method involves presenting the subject with three elements and asking him to describe in what way two of them are alike and the third different. This similarity versus difference provides a dichotomous construct. The process is repeated until there are approximately twenty to thirty constructs.

Laddering is a technique devised by Hinkle(1965) in order to indicate the connections between constructs in a more certain manner. It is accomplished by obtaining a construct by the triadic method and asking the subject at which pole he would prefer to see himself. He is then asked why and the reason is stated in terms of a construct (of a higher order). This is repeated until a full set comprising a construct and all its implications (hence the name Impgrid) is obtained. The argument for the use of this method is that the interrogation forces the subject to go upwards through his construct system towards the more superordinate constructs. With some subjects, particularly children, it may be more useful to discuss the child's problems and views - this may reveal his characteristic modes of construing which can be used as constructs for the grid.

The distinction between elements and constructs is formal - any element could be a construct in another grid and vice versa.

The early forms of the grid simply required the subject to state whether each of the elements belonged to the emergent or implicit (contrast) pole of each construct. In the matrix of

cells, a tick would indicate that the element occupied the emergent pole of the construct, while a blank would indicate the implicit pole. This form is equivalent to rating the element on a two-point scale.

On this form the relationships between the constructs are computed by means of the matching score - this is derived by taking two rows representing two constructs and counting the corresponding ticks and blanks. One would expect half the cells to correspond by chance. Thus the deviation from chance is calculated and this becomes the matching score. In this grid each row of ticks or blanks can be regarded as a kind of operational definition of the construct given by the subject, while each column can be seen as a kind of personality profile of the element as drawn up by the subject.

Statistical difficulties are encountered, however, if the subject chooses as few or as many elements as he likes for each pole of the grid, resulting in lopsided lines which provide misleading matching scores. This can be overcome if the subject is forced to divide the elements equally between the two poles of each construct. However, this results in psychological difficulties for the subject and some confusion as to the precise meaning of the subject's test behaviour. This method is known as the split-half method.

One of the later variations is to ask each subject to rank order the elements along the constructs. The degree of relationship is here determined by the relationship score which is derived by working out the Spearman rho's of the rank orders or various pairs of constructs, squaring each rho and multiplying by 100, the latter procedure being carried out because rho's are non-linear and cannot be used directly as scores. This gives one a variance in common score. Because of the greater variance, this method can be successful with a small number of elements (eight to ten).

A rating form has also been discussed (Bannister, in

Mittler (op. cit.). Here the subject is asked to rate the elements on a seven-point scale with the end points anchored in the two poles of the construct. A measure of the relationships between the constructs can be obtained by converting the ratings into split-half dichotomous rows, by converting them into ratings, or by calculating difference scores directly from each pair of rows. This form most nearly resembles the semantic differential of Osgood et al. The advantage of this method is that it allows a great amount of freedom and the ability to reflect one's constructs naturally, i.e. it allows for "lopsidedness".

The above are the main forms of the test. Hinkle has further elaborated the methodology in terms of the Impgrid, elaborated above, and the Resistance to Change grid. The latter is administered in the following way - the subject is presented with two constructs at a time and asked to say on which he would prefer to change if he had to move from the preferred to the unpreferred pole. This provides a rank ordering of constructs according to their resistance to change.

Because of the many different approaches in grid testing, a problem has arisen in research, namely, that of the validity of the equivalence of different methods. Bannister is adamant that this should be extensively investigated before interchanges become rife.

Because of the nature of grid measurements, it was deemed that the most productive method of analysis would be a non-parametric factor analytic technique, even though Bannister feels that the psychological significance of "factors" is still obscure. This involves scanning the grid with a successive number of trial factors in order to obtain the major factors involved through successive approximations. A popular usage is that of cluster analysis, using a form of Principal Component Analysis, where one obtains a segment of the construct system under consideration showing the loading of elements on clusters and clusters on elements. This is the method used in those

diagrams illustrating results of grid investigations where two axes are portrayed - Bannister's Anchor method.

Specific analyses of the relationship scores can be made, e.g.

(a) Comparisons can be made between a given set of relationships from one subject and normative data which can be assumed to represent the "mean relationship" between a set of constructs. This provides a social agreement score - a rough index of the degree of idiosyncrasy in the construct patterning of the subject.

(b) One can compare the set of relationships derived from the grid and what the subject imagines his construct relationship to be - this is a measure of insight.

(c) One can devise an index of the stability of a construct system by measuring the consistency of grid relationship scores over time or from one set of elements to another. This can be done as a function of time or in relation to the impact of varying validational fortunes, e.g. during psychotherapy.

There are a number of specific considerations which must be given attention in the construction of a grid:

(a) Firstly, all the elements must be within the range of convenience of all the constructs in a single grid, otherwise the subject must be allowed to specify when he is faced with a range of convenience problem. If he cannot do this, one will obtain spuriously low correlations as a result of the lack of meaning in the tasks for the subject. On the other hand, allowing expansion of the problem by using a blank for a range of convenience problem leads to statistical difficulties.

(b) Secondly, the subject should explicate constructs with an unchanging context in view, i.e. no shifts should occur in meaning when applying the same construct to different elements or between the poles of the same construct.

(c) Thirdly, grid results should be predicted in advance of testing, as post hoc explanations are inferior to hypothesis

testing. Sometimes an initial grid may be used to generate hypotheses which are then tested on later grids or behaviours.

The grid methodology should be evaluated in terms of the requirements for a psychological test laid down by Kelly himself (1955):

(a) A test should be able to define the client's problem in usable terms.
(b) It should reveal the pathways or channels along which a client is free to move.
(c) It should furnish clinical hypotheses which may subsequently be checked and put to use.
(d) It should reveal those resources of the client which might otherwise be overlooked by the therapist.
(e) It should reveal those problems of the client which might have been overlooked.

According to Kelly (ibid) one must appraise the utility of a test in terms of:

(a) whose yardstick the test represents,
(b) whether the test elicits permeable constructs, i.e. those which have continuing relevance for the subject's life,
(c) whether the test elements are representative of life's events,
(d) whether the test elicits role constructs, i.e. those involving the self and other people,
(e) what the balance between stability and sensitivity to change is,
(f) whether the test can reveal constructs which are communicable to other clinicians, and
(g) whether the test serves its basic functions.

Grid methodology can be seen as providing an operational definition for some of the tenets of construct theory, but it is not adequate as an experimental expression of the total theory. It cannot obviate the problem of any quantification, i.e. that only a sample of an individual's construct system can be tapped

in this way and that even what is tapped is oversimplified. The oversimplification is seen in the way relationships are measured and Hinkle's criticisms of this (see above). The correlational coefficient or matching score can only reflect reciprocal relationships between constructs and must necessarily distort or conceal the complexities of actual construct systems. Hinkle's method stresses the importance of the position of constructs in the hierarchical network. In the normal grid, one cannot distinguish between superordinate and subordinate constructs, although there is a tendency to assume that those which account for the greater amount of variance may be more superordinate.

The value of grid methodology is still uncertain, although its usefulness has been pointed out in certain areas, e.g. that which is the focus of this thesis - schizophrenic thought disorder (Bannister et al.). The most significant danger is that of viewing grids as an extension of standard psychometry, without paying attention to the very different theoretical paradigm from whcih they emanated.

The most crucial aspect of grid methodology is its scientific orientation while still fulfilling Bannister's (in Mittler, 1970) claim that:

> It moves psychologists away from mimicry of nineteenth century physical scientists pondering the pre-determined behaviour of organisms towards an attempt to predict men by understanding what they intend (p. 777).

The most serious questions revolving around grid methodology have concerned its reliability and validity. However, Kelly has a unique way of looking at these concepts.

As Bannister and Mair (1968, p. 156) maintain:

Since this is a procedure relating to a theory

> which affirms that 'man is a form of motion', it is necessary to challenge the orthodox notion of high reliability as an invariably desirable characteristic of tests.

For Kelly, reliability is seen as "a measure of the extent to which a test is insensitive to change".

Bannister and Fransella (1971, p. 76) quoting Mair put the issue in a nutshell:

> ... instead of expecting a measure to yield near identical scores on all occasions, one should substitute the notion of predicting whether there should or should not be change. Our aim should be to understand the meaning of change, not to regard it as an irritating interference with the 'reliability' of our tests by an irresponsible subject - to be looked on as 'error variance'.

In addition to this it is maintained that the reliability of the grid can never be ascertained or presented in a cook-book manner, for the simple reason that the grid does not exist. What exists is merely a methodology which can be adapted in multitudinous ways to multitudinous problems.

However, the following findings relating to reliability have been reported (mainly by Bannister and Mair, op. cit.):

(a) Constructs are usually quite stable over time.

(b) Elements are also quite stable when elicited by the role title lists. However, when these are abandoned, reliability is lowered. The stability of element allotment has not been assessed; but this is not felt to be important as it is the relationship between constructs which are under examination.

(c) Usually the factorial similarity across grids, all other things being equal, ranges from appromixately ,6 to ,8. It has been found that it is too complex and difficult a

task to compare the cluster analysis scores.

(d) The "Intensity" measure (the arithmetic score of the inter-relations of constructs, see below) is not very stable, but this is a very compound measure.

(e) The "Consistency" score itself (see below) has been found to be very useful, e.g. there may be lowering of serial retest coefficients in individuals undergoing a constructual change process as in psychotherapy.

(f) The measurement of lopsidedness is relatively stable.

(g) The reliability of the "Insight" measure (i.e. how much the client's matrix compares with what the therapist perceives the client's matrix to be) has not really been assessed, but it has proved useful in discriminating normal from psychiatric groups.

(h) The measure of social deviation has also not been assessed with respect to reliability, but it has also proved valid in terms of predicting normal as against psychiatric group differences.

(i) A high equivalent form correlation shows that estimates of mean population patterning in construct relationships may have a high degree of reliability, although estimates of individual construct relationship patterns may have far less.

Reliability of grid procedure can be affected in a number of ways:

(a) By varying validational fortunes. Validation seems likely to result in a stabilization of construct patterning and thus a higher matrix pattern reliability.

(b) By the variance of subsystems (classes of elements); of constructs (e.g. superordinate constructs are assumed to be more stable than subordinate ones); by individual variance (of psychological interest, rather than of interest purely as "error" - the psychologist is freed from the limitations of group data as he has idiographic measures); by group variance (used e.g. in discriminating thought-disordered schizophrenics from normals and other psychiatric groups); by administrative variance; and variance in grid form.

The major tendency is to see reliability not as an experimental necessity, but rather as something to be investigated itself.

For Kelly validity is "the capacity of a test to tell us what we already know". In other words, any new measure, in order to be valid, is, in fact, measured against old ones. Thus to be valid, a test must become victim to the faults of old ones.

Usually validity is ascertained by correlating the measure concerned with other observable behaviour. However, according to Bannister and Mair (op. cit., p. 179):

> ... in terms of construct theory, constructs cannot be directly tested against an unconstrued reality ....All that can be proved is that a construct system hangs together all along the line ... and that this may be publicly demonstrated.

As with reliability, the validity of the grid is impossible to assess as there is no one grid. There is no adequate study of validity relating to grid measures in any orthodox sense; however, a number of valid inferences have been drawn from grid data and a number of potential uses of grid measures have been indicated:

1. Concerning structural measures

(a) The incidence of significant statistical relationships among personal constructs for one subject is a validation of construct theory. Most subjects show this relationship, those who do not being labelled as "abnormal" (e.g. thought-disordered schizophrenics) thus further validating the grid.
(b) The grid can point out differences in structure between subsystems along predicted lines, e.g. thought-disordered schizophrenics show less structure in constructs dealing with people than those dealing with objects (Bannister and

Salmon, 1966).

(c) The grid also differentiates between different types of constructs in a predicted manner, e.g. constellatory and propositional constructs.

2. Concerning content

(a) A number of studies have pointed out the importance of knowing what an individual's personal constructs are, e.g. as an aid to successful psychotherapy.

(b) The grid reflects public criteria concerning construct relationships reasonably well, thus validating its use as a nomothetic measure in addition to its use as an idiographic measure.

3. Concerning behaviour

An example of this type of study is that of Fransella and Bannister (1967), quoted in Bannister and Mair (op. cit.), where constructs and voting behaviour were compared and significant construct interrelations were found amongst different party supporters.

4. Concerning the individual case

Many studies have been undertaken to prove the grid's usefulness in this area, particularly with respect to predicting changes in the individual at different stages of psychotherapy and following up predictions about the client made by the therapist. An example of this is a study by Fransella and Adams (1966) of a patient who committed arson.

One specific problem with the validity of the grid reported in the literature is related to discriminant validity (Adams-Webber, 1970). The author feels that:

> ... the fact that several composite indices which seem very similar in structure are used to assess

> what are presumed to be different variables is a potential source of considerable confusion (p. 83).

He cites as examples the utilizations made of grids to measure "cognitive-simplicity"/"complexity", "identification", and "constellatoriness"/"stereotypy", all of which are assessed in similar ways. In his own study he found a very high correlation between these variables and concluded that if they were to be regarded as distinct processes, they would require measures with more discriminant validity.

Bannister and Mair (op. cit.) conclude that validity in the orthodox sense is possible in a limited sense. However, the true validity of the grid has not been assessed, because such factors as ongoing change, the way the client views the process, etc. (all corollaries of the theory) have not been taken into account in those assessments which have been done.

Much research has been generated in the "Kellian" paradigm with the bulk of it centring on repertory grids, some mentioned above. Studies have been undertaken to clarify issues relating

(a) to construct theory per se, e.g. research on differentiating propositional, pre-emptive and constellatory constructs, etc. and
(b) to other areas, chiefly comprising clinical ones, e.g. identification, transference, studies of individual cases, schizophrenic thought disorder, etc.

The last area mentioned has been one of the major proliferators of research in the field. This area will be dealt with in detail below. No matter that some of the research is still in the embryonic stage, that there is a lack of normative data, etc. There is, nevertheless, a certain dynamic quality and a spirit of enquiry in evidence.

2.3 Evaluation of the Paradigm

It is the close linking of theoretical concepts and operational definitions which is the most important and valuable aspect of the Kelly tradition. Personal construct theory is, as Bannister and Mair (ibid.) maintain, one of the few attempts in psychology at theorizing at a significantly high level of abstraction. By doing so:

> ... it frees itself from the built-in obsolescence of theories which refer specifically to the peculiar anomalies of some period of time which cultural change may outdate, or some sub-cultural factors which cannot be generalized to studies where other cultural organizations and influences exist.
>
> (Ibid. p. 36.)

It also allows itself unlimited application. However, it has been extrapolated rather overmuch and rather superficially in some areas. Bannister and Mair (ibid.) point out that just inserting one's hypothesis into the grid as one construct, e.g. passive-assertive, is not good enough. One must evaluate what the terms could mean to the individual and work out a more extensive grid to cover these features. Another problem with the use of the grid is that it is not yet known whether all forms are equivalent; and consequently cross-comparisons may be meaningless.

In addition to this, the grid is limited in that it can express only one type of linkage between constructs, i.e. a reciprocal one represented by the unitary index of association. This may subtract from the psychological meaning of construct interrelations. The Impgrid devised by Hinkle which elicits constructs by the process of laddering, which by its very nature shows the relationship of constructs, is an improvement in this respect.

There is also the problem of the range of convenience of

the constructs which must depend on the individual subject and the context. Furthermore, not enough is known about the verbal and conceptual ability necessary to complete the task of doing a grid.

The different types of constructs are not yet clearly differentiated or elaborated. Clarification is needed here.

On a deeper level there is the problem that one cannot be sure that the statistical relationships emerging from grid analyses measure psychological ones. As Bannister and Mair (ibid.) caution - one must beware of calculating particular qualities just because they can be calculated.

The greatest difficulty is the lack of orthodox validation. Bannister's approach to this has already been indicated. He and Mair (ibid.) mention that validation work is usually done on small segments of behaviour from which generalizations cannot really be made. However, defences of this nature appear somewhat facile.

On the whole Bannister and Mair (ibid.) feel that:

> Too much attention has been paid to the grid as a cross-sectioning and static mapping device, and too little attention has been given to the use made by people of constructs elicited by the grid or to the changes in construing following the new validational experiences which we provide (p. 210).

The potential use for the grid and personal construct theory is great - for explaining and investigating areas such as child development, interpersonal relations, clinical problems, memory, learning, etc.

The theory provides elucidation of some of the metatheoretical problems facing psychology today e.g. the freedom-determinism issue where Kelly views the two concepts as two aspects

of the same thing, as relative and not absolute. In addition, its alternativistic way of looking at the world gives us a method for dealing with such issues as whether physiological constructs have any place in psychology. This problem is easily dealt with if one realizes that events are not inherently physiological or psychological but can be construed in either way. A good example of the use of construct theory to illuminate a problem in psychological theory and practice is with reference to the issue of classification in psychopathology. As Kelly (in Maher, 1970, p. 296) says:

> Anxiety ... is not a category of patients, nor is it even a category of symptoms, but it is a contrived reference axis against which any behavioural observation may be plotted, even including observations that may stand out much more clearly in the light of other constructs.

In addition to this way of looking at classification categories, Kelly says that we should use constructs propositionally and not in a constellatory manner (i.e. linking the category up with others) nor in a pre-emptive fashion (i.e. excluding other categories). Thus one will not limit nor restrict one's self unnecessarily and in addition will not suffer from what Kelly so aptly calls

> hardening of the categories, a common affliction among scientists, (which) usually marks the end of the creative phase of a distinguished career
>
> (Kelly, ibid., p. 294).

The theory itself is sophisticated in that it utilizes modern metatheoretical prescriptions, especially alternativism (cf. Feyerabend, 1970), as mentioned before, and also predictions, which in the philosophy of science terminology of some (cf. Hempel and Oppenheim, in Brody, 1970) is equivalent to explanation, the latter also implying dynamic in place of static variables.

Its most laudable virtue is, I feel, contained in the title to one of Kelly's papers (in Maher, op. cit., pp. 133-146) - "Humanistic methodology in scientific research". Here he says:

> This is crucial - humanistic psychology needs a technology through which to express its humane intentions. Humanity needs to be implemented, not merely characterized and eulogized (p. 135).

It is this important task that, I feel, personal construct theory has at least in part fulfilled and for this even some of its more glaring faults can, for the moment, be forgiven.

Having understood the development and present situation of Personal Construct Theory and its offspring the repertory grid technique, it is now possible to turn to the focal point of the present discussion concerning this particular paradigm, i.e. Bannister's hypothesis concerning schizophrenic thought disorder and his work in this area.

2.4 Bannister's Application of Construct Theory and Grid Technique to Schizophrenic Thought Disorder

Bannister and his colleagues have done numerous grid studies to elucidate the nature of thought disorder, its genesis, issues relating to differential diagnosis and those relating to "corrective" psychotherapy.

For Bannister:

> Construct theory not only makes meaning versus noise a prime issue in the context of thought disorder, but it offers a mode of attack on the problem.
>
> (Bannister and Fransella, 1971, p. 161.)

He advocates that it is not primarily noise, i.e. incomprehensibility, which is of importance in thought disorder, but rather a particular type of structure and organization. This is characterized by loosened construing which involves "a construct which leads to varying predictions but which retains its identity" (Bannister, 1960, p. 1241). In grid terms this means that the statistical relationships between the constructs are low and the pattern of relationships between the constructs is unstable over time, i.e. there is a lack of conceptual structure and consistency.

According to the nature of personal construct theory, it is vital to approach the problem in a dynamic, rather than a static, manner.

> It is not enough to give an account of the condition as it stands and simply assert that it is all due to, say, a defective 'filter mechanism'. A whole series of ideas needs to be put forward to account for the transition from ordered to disordered thinking. (Bannister and Fransella, op. cit., p. 164.)

The developmental process which Bannister propounds is termed "the serial invalidation hypothesis" (Bannister, 1963, 1965a). What is hypothesized is that the pre-morbid individual is invalidated in his experiences, i.e. his predictions about the world, in terms of personal constructs, are proved incorrect by some means. His response to this experience could be a number of different strategies. He could make a

(a) slot change - a contrast prediction,
(b) shift change - construe in terms of a different construct, or,
(c) structural change - alter the links between constructs.

If invalidation continues over an extended period of time, the individual may find it necessary to loosen the links between his constructs so that he can never make an incorrect prediction, in fact he can hardly make any proper type of prediction at all. He can, however, still make post hoc explanations, as his constructs will loosely cover events.

Bannister carried out four studies to investigate his serial invalidation hypothesis (Bannister ibid.). In the first study ten "normals" were given photographs and asked to rank them on various adjectives. This procedure was repeated for ten days with subjects being informed on each day that their judgements were correct on half the adjectives, i.e. they were validated, and incorrect on the ramaining half, i.e. they were invalidated. Validation resulted in "tighter" construing, while invalidation did not show any significant results. The design was felt to be inadequate in three respects:

(a) The initial slot-rattling, i.e. shifting to the contrast pole of a construct following invalidation, was not accounted for.
(b) A query arose as to whether it was possible to invalidate one set of constructs while at the same time validating a related set of constructs.
(c) The experimental situation precluded invalidation from being carried out for a significantly extended period of time.

A further study validated and invalidated separate groups of subjects. Again invalidation did not yield significant results. Bannister raised a "special plea" here by saying that invalidating all available constructs might result in so severe a situation that in some unmeasured way loosening is delayed.

The 1965a studies are an improvement on the previous ones. In the first study a new group - a no-information group - was included. However, results remained insignificant. The second study validated and invalidated the same subjects again. However, in this case, the two groups of constructs were unrelated. Here there was a significant loosening of invalidated constructs; but the loosening did not reach the level expected of thought-disordered schizophrenics.

There seems to be some support for the hypothesis. However, the studies suffer from the malady of all experimental studies of clinical phenomena in that the laboratory setting can always only be an approximation of the natural setting. Bannister, however, begging the question of validity, hopes to "cure" schizophrenic thought disorder therapeutically, by validating patients' experience (Bannister, 1971).

The first use of the grid to differentiate thought-disordered schizophrenics from other groups was reported by Bannister in 1960. By 1962b he had refined the measure so that there was a greater discrimination. This was due to changing the elements from names of familiar people to photographs in order that thought-disordered schizophrenics do not give remembered judgements. In addition, some of the measures were improved by using proportional techniques in place of raw scores. The differentiations between thought-disordered schizophrenics, non-thought-disordered schizophrenics and other groups found in the grid study were replicated.

Four main measures were derived from the grid:
(a) Consistency - a correlation between performance on the first

administration of the grid and the second administration, based on the hypothesis that for normals construct systems are stable over time.

(b) Intensity - the sum of all the intercorrelations between scores on the two administrations, based on the theoretical construct of conceptual structure, i.e. inter-relationships, in normals.

(c) Coefficient of Variation - the standard deviation of the inter-relationship of each construct individually with all the other constructs, based on the postulate that not all constructs respond in a similar way to "varying validational fortunes".

(d) Social Deviation - the discrepancies between the subject's total matching score on each pair of constructs with the mean matching score of the norm group, i.e. a measure of idiosyncrasy.

By 1966 Bannister and Fransella had found that the former grids were cumbersome and lacking in normative data. Their purpose was to produce a clinically economical and adequately standardized grid test for detecting the presence of schizophrenic thought disorder.

Each subject in the standardization sample was given four photographs of men and four of women. There were two administrations in which these had to be ranked on the constructs "kind", "stupid", "selfish", "sincere", "mean", and "honest". These constructs were used because previous studies had indicated that they are highly inter-related for non-thought-disordered subjects. Thus this would increase the degree of differentiation between these subjects and thought-disordered schizophrenics who are presumed to give low relationship scores regardless of constructs presented to them.

The total correlations for both grids were computed to provide an Intensity score for the subject. These correlations are computed by calculating Spearman rho's between pairs of rankings, then squaring the rho's and multiplying by 100 to give "percentage variance in common" scores which are linearly

related since correlations (being not linearly related) cannot be used as scores. The sum of these scores constitutes the Intensity score. A correlation of the ranked correlations of each grid was computed to provide a Consistency score, i.e. a test-retest reliability coefficient.

Seven different groups were tested - 30 thought-disordered schizophrenics, 30 non-thought-disordered schizophrenics, 30 normals, 30 depressives, 20 neurotics, 20 organics and 28 subnormals. The ages of the subjects were 17 - 60 years, all with IQs above 80 (except for the subnormals). IQs were assessed by use of the Mill Hill Vocabulary Scale. All diagnoses were carried out by three experts - a consultant, a registrar and a psychologist. Intelligence was ruled out as an extraneous variable, but the instructions proved too complicated for the subnormal group. Age was not a significant factor except in connection with the organics as age is significantly related to the different forms of brain damage. Sex was also ruled out as an extraneous factor.

It was found that Intensity and Consistency correlated significantly for all groups except normals. There is evidence that loose construing goes together with a radical change in the pattern of construing. However, not all the discriminant variance is held in common, so one must use both measures. Non-parametric measures are used as the distributions are not normal.

The results for the different groups were as follows:

Table 1

Intensity and Consistency Scores
in Bannister's Standardization Sample

	T-D-S	Non T-D-S	Normal	Depressive	Neurotic	Organic
I mean	728	1183	1253	1115	1383	933
Std. dev.	369	390	339	456	517	524
C mean	,18	,73	,80	,75	,74	,73
Std. dev.	,39	,34	,34	,41	,45	,47

(Reprinted from Bannister and Fransella, 1966, p. 98.)

The only significant differences in the scores between groups were obtained between the T-D-S (thought-disordered-schizophrenic) group and the other groups respectively.

If one were to accept a cutoff point of 1000 on Intensity (I) and ,49 on Consistency (C), below this lie 80% of the T-D-Ss and 6,4% of the other subjects. It is advisable to set the cutoff points so as to minimise false positives even at the expense of maximising false negatives, as the diagnosis of a non-thought-disordered subject as thought-disordered will have more "serious" psychiatric consequences than the converse. With a C of ,14 and an I of 700 it is possible to eliminate the organic group. Consistency scores appear to discriminate better between organics and T-D-Ss than Intensity scores.

It must be remembered that the test is one of thought disorder and not of schizophrenia per se, i.e. it can contribute towards a diagnosis of schizophrenia, but it cannot negate it.

This form of the test has limitations regarding the capacity to discriminate thought disorder in terms of diagnostic criteria, but there are problems with these criteria in terms

of interjudge reliability which would limit the discriminative powers of any test using them.

The three studies reported (Bannister 1960, 1962; Bannister and Fransella, 1966) all show similar results. According to Bannister and Fransella (ibid., p. 101):

> This degree of consistency in experimental results suggests that the measures are empirically dependable and probably related to theoretically central rather than peripheral aspects of thought disorder.

Bannister and Fransella and Agnew (1971) performed an analysis of the characteristics and validity of the grid test of thought disorder. The sample consisted of 316 psychiatric admissions. The authors related the scores on the test to clinical judgements of thought disorder. The use of the test was supported when using clinical criteria. There were significant differences between other diagnostic groups as well. The organic group scored lower than the thought-disordered group and it appears that it is difficult to discriminate these two groups using this test alone.

An important finding was that the I scores increased on the second administration for all groups, including the T-D-S group:

> (this) may be taken to suggest that even at very low levels of structure, tightening remains a test (and maybe a therapeutic) possibility (p. 147).

In this study the content, i.e. pattern of relationships between constructs, was also examined. Each of the relationships between the pairs of constructs has a modal direction (+/-) for any normal population. To obtain a Social Deviation (SD) score, one simply counts for each individual how often the correlations for each pair deviate in direction from the norm, partialling out the effects of differences in I by using a rho of ,5 or greater.

> The data support the general argument that a breakdown in structure may be initiated by deviant patterning. Ideas become odd before they become chaotic and lose their linkages. (Ibid., p. 149.)

Another interesting finding was that subjects with a clear precipitating factor for their illness had a higher Social Deviation score than those without. These factors may be events traumatic enough to require peculiar adaptive patternings of constructs. The SD score did not correlate significantly with age or IQ; however, females were generally lower than males. This has socio-psychological implications as well as being possibly connected with the fact that there is a lower incidence of schizophrenia among females.

The authors, however, conclude that the test is not as well designed to measure content differences as it is to measure structural ones.

Foulds et al (1967a) mention that a possible drawback of the test is that the authors use a present-absent dichotomy concerning thought disorder, whereas the phenomenon may be distributed along a continuum especially when viewing it in terms of clinical practice. The scores these authors obtained were less "abnormal" than the normative groups of Bannister and Fransella. This could be related to the fact that the above point was taken into account. They also found that the I and C measures correlated significantly positively for acutes but not for chronics. C was significantly related to a psychiatrist's rating of thought disorder in the expected direction among acute, but not chronic schizophrenics. The pattern was similar for I. With regard to the results for chronics, the authors feel that their findings could be attributed to the fact that the subjects respond in a random way or they cannot be rated because they have deteriorated socially to such a degree.

In a further study (Foulds et al, 1967b) the authors found it difficult to discriminate between acutes and chronics on C and I. In general, they found that non-paranoid schizophrenics had more abnormal scores than paranoids.

A further validity study was carried out by Poole (1970). He performed a retrospective investigation of subjects who had been given the grid to assess the possibliity of thought disorder. The validity measures (the criterion being clinical ratings) did not reach a very significant level. However, Poole felt that the criterion was not a good one and that until clinical assessments have improved, psychometric assessments are premature.

Bannister's work has not suffered from a lack of criticism.

One particular volley of criticism has come from Frith and Lillie (1972). They maintain that "looseness" of constructs is not of primary importance in assessing thought disorder. They feel that a more useful measure is the Element Consistency score, an assessment of the "errors" made in assigning ranks to the elements, i.e. a test-retest reliability measure. Slater (1972) has developed an "improved" measure of consistency which takes Element Consistency into account. Frith and Lillie maintain that the photographs used in the grid have a low discriminability value for schizophrenics who find difficulty in dealing with complex information. This leads to their making errors. Their study shows that the error score is a better predictor of thought disorder (validated against clinical diagnosis) than the I and C measures. This they maintain is a lower level explanation and is not dependent on construct theory.

Bannister (1972) replies in critical vein to the above authors. He maintains that: firstly, the schizophrenic group comprised subjects other than thought-disordered subjects; secondly, Bannister has shown his results to be valid even when different sets of elements have been used in the two administrations, thus obviating any measure of element consistency;

thirdly, element consistency is not a new measure but merely a more simplified and concrete form of the original measure, and thus subsumed by it, not alternative to it.

In addition, a study by McPherson et al (1973) using the measure of Element Consistency validated Bannister's results. When the effects of Intensity and Consistency were partialled out, the correlation between Element Consistency and clinical ratings was insignificant; and when Element Consistency was partialled out, Intensity and Consistency remained significantly related to clinical ratings.

Haynes and Phillips (1973a) have also levelled criticism at Bannister's work. They maintain that there is no evidence that schizophrenic thought disorder is related to Intensity once the contamination of task scores by inconsistency is removed, i.e. it is inconsistency, rather than loose construing which characterizes thought disorder, and their data appears to bolster their argument. They further maintain that the assertion that thought-disordered schizophrenics are inconsistent is not dependent on the "conceptual apparatus" of personal construct theory, i.e. that one should parsimoniously ignore it. Their final assertion is that Bannister's elucidation of loosened construing is incorrectly developed from Kelly's ideas. They clearly see Kelly as supporting their own hypothesis.

Again Bannister (op. cit.) contends that this conceptualization is merely a lower level one than his own and derivable from it, thus not alternative to it. Haynes and Phillips (1973b) are not happy with Bannister's comments, and it seems that both are arguing from different paradigms and that no resolution is therefore possible.

Williams (1971) is yet another critic. He maintains that a schizophrenic's scores on the grid will vary according to the richness of the source of cues and that this will affect the differentiation between schizophrenics and normals. His study involved varying the elements in the grid from names and

addresses (poor in cues) through photographs to names of people known to the subject (richest in cues). He concludes that the nature of the elements is significant and the results obtained are those that would be predicted by cue-availability theory, i.e. performance improves the richer the cues. Bannister's contention that patients score higher on I and C when ranking known people as compared to photographs of unknown people because of remembered judgements concerning the former, is refuted because the elements comprised people met by the subject before or after his illness. Thus Williams proposes that cue-availability theory is a more parsimonious explanation than loosened construing.

Bannister again maintains that Williams' findings are deducible from his own work (cf. Bannister and Salmon, 1966, see below).

Bannister's main bone of contention with his critics is that they refuse to view his findings in the light of their theoretical underpinnings. He maintains that the value of the concept of loose construing lies in

> its capacity to relate back into (the) theory and thereby generate a whole series of testable hypotheses and an explanation for thought disorder which in turn relates to explanations for many other kinds of psychological process.
>
> (Bannister, op. cit., p. 413.)

He disapproves of their summary replacement of his theoretical construct with an "ad hoc operational definition".

He sums up the use of the grid himself by saying (Bannister, ibid.):

> The argument is not that the grid test of thought disorder is, in any sense, beyond criticism. Its sampling of constructs is inadequate, its use of

> photographs rather than known people is questionable, its validation rests too much on the shaky ground of psychiatric categorizing, its operational definition of loose construing is not clearly enough related to the construct theory definition, and so on and so forth.

A good example of criticism which would be considered valid by Bannister, in that it evaluates grid findings in terms of construct theory, is that of Radley (1974). He maintains that:

> constructs are modified in the context of the events which the person is trying to predict, and ... his construing of another person may usefully be viewed as an attempt to maintain a consistent understanding of that person's behaviour ... it may be possible to describe construct loosening as a process of dedifferentiation of conceptual structure. Such a proposition is different from Bannister's (1960) hypothesis in so far as it is based upon changes in the way the person applies his constructs to events, rather than upon variation in the relationship between constructs.
>
> (Ibid., p. 323.)

He asserts that assessing these changes in the application of constructs would be more beneficially achieved by the use of elicited rather than supplied material.

It is this sort of attempt at constructive criticism that seems likely to advance research in such a manner as to improve upon the points raised by Bannister himself (see above).

The above quoted research forms the core of the work done concerning the validity of the technique. However, reference to some other work which might prove of interest will be made.

The presence of common symptoms in mania and schizophrenia - i.e. pressure of speech, flight of ideas, clang associations, distractibility and inability to adhere to a line of thought - has given rise to some work concerning the differentiation of these two groups by grid methods. An example of such a study is one by Breakey and Goodell (1972). Their findings were that Intensity and Consistency did not differentiate manics and schizophrenics and that only Consistency differentiated manics and normals. However, their schizophrenic group was undifferentiated with regard to thought disorder. This situation they maintained was more representative of the "real life clinical drama". Bannister, however, only purports to refer to thought-disordered schizophrenics in his claims.

Mellsop, Spelman and Harrison (1971) circumvented the above criticism. They showed that the Intensity scores of the manics were significantly different from those of the thought-disordered schizophrenics, and not significantly different from those of the controls. The differences in the Consistency scores of the three groups did not, however, reach any statistical significance. Thus it appears that the grid does differentiate the two groups but only in terms of Intensity scores.

Bannister and Salmon (1966) found that thought-disordered schizophrenics responded differentially to elements, with respect to whether these were people or objects. They concluded that loosening of construing occurred in relation to interpersonal construing, i.e. the area of maximal invalidation. This provides further construct validity for the test.

This theme has been elaborated by other workers. Williams' (1971) research (see above) is yet another analysis of the responses to differing elements on the grid - in this case elements differed with respect to their richness of cues. McPherson and Buckley (1970) found a similar differentiation with regard to constructs rather than elements. Thought-disordered schizophrenics, according to them, are less

disordered when construing in terms of physical or objective criteria rather than psychological criteria. This finding was replicated by Williams and Quirke (1972). McPherson, Buckley and Draffan (1971) strengthen the earlier McPherson and Buckley argument by showing that schizophrenics who are thought-disordered on the Bannister-Fransella grid, spontaneously use significantly fewer "psychological" constructs than non-thought-disordered subjects. McFadyen and Foulds (1972) investigated both elements and constructs in an attempt to validate Bannister's contention that grid performance can be generalized to the subject's construing of actual people in his day to day living. They compared performance on the Bannister-Fransella grid with performance on a grid with completely elicited content. They found the two grids to be related, although not completely, in that the I and C scores on the elicited grid were generally higher.

This group of studies are all concerned with the content of grid methodology in contradistinction to looking at statistical relationships alone.

Muntz and Power (1970) found a significant relationship between the presence of thought disorder in patients diagnosed as thought-disordered and the presence of thought disorder in their parents. This suggests:

> that parents may play some role in the creation or presence of thought disorder in their offspring or vice versa. (Ibid., p. 708.)

This finding gives some tenuous support for the claim that there is a process connected with serial invalidation occurring in the families of schizophrenics. The finding is related to other findings concerning the significance of parental behaviour in the families of schizophrenics, e.g. Singer and Wynne (1969).

It is apparent that much research has been proliferated in the area. Although there are critics, it is clear that grid

methodology has some value, especially in that it is so closely linked to a theoretical framework which extends far beyond the realm of schizophrenic thought disorder. Still extension, replication and validation are very much in demand, and one should not be so blasé as to dismiss this fact.

3. Some Comments on the Relationship between Language and Thought

Having outlined the major points of the paradigm and its derived measures within the domain of which the present research was carried out, it is timely to turn to a discussion of the major independent variable in the research under discussion and its possible relationship to schizophrenic thought disorder. It is appropriate to preface this with some mention of the connection between language and thought, an age-old topic in psychology and other disciplines.

Plato maintained that thinking is silent speech. This line of argument was maintained right through to Watson who equated thinking with subvocal talking. Max Müller in 1887 asserted that thought and language were inseparable. This close connection is also seen in the Whorfian hypothesis where it is maintained that differences in verbal usage lead to differences in thought and behaviour. Lacan (Robins, 1975) maintained that we are born into a language system which governs the social universe of communication and law, i.e. it governs man's place in it.

The question arises as to whether thinking is something other than or greater than verbal responses and whether thinking is a direct product of speaking.

Vygotski maintains that thought and language have independent roots although they become interdependent, i.e. there is a merging of the lines of development. Piaget also feels that thinking is not merely a by-product of linguistic functions. Words used as labelling devices can direct some part of thought, but "transformational" thinking requires more than words. The Würzburg school also reported that subjectively it appears that thought involves more than merely language. Ryle also appears to agree with this line of argument when he says that thinking is not so much a case of having words in one's mind, but rather a case of looking for and sometimes finding words.

The majority of theorists appear to concur with the view that language directs thought but is not equated with thinking (Berlyne, 1965; Thomson, 1966; Adams, 1972).

The present thesis is concerned with bilinguals and therefore it becomes relevant to investigate the connection between language and thought when the subject has two or more languages in his repertoire.

Lambert (1972) discusses the difference between co-ordinate bilinguals - where the contexts for the learning of the two languages are distinct - and compound bilinguals - where the contexts are fused. He maintains that the co-ordinate bilinguals develop separate meanings for each of the alternative language symbols. There is comparatively greater semantic distinctiveness between a word in one language and its translation equivalent in the other. There is, in addition, more associative independence of the translation equivalents in the two languages. It seems that for compound bilinguals there is greater semantic similarity for words in the two languages and thus the two languages occasionally merge or conflict as a result of being two competing systems. In South Africa, where there is a distinction between English and Afrikaans cultures, it is more likely that bilinguals are of the co-ordinate rather than compound type.

Ervin-Tripp (in Adams, 1972) reported a study of Japanese women married to Americans. He concludes (ibid., p. 260):

> No bilingual, however fluent in two languages, has exactly equivalent experiences in both language communities.

This resulted from his observation that certain topics of discussion were more easily conducted in one language than another and if the subject was forced to use the unsuited language, certain forms of disruption were apparent.

Lenneberg (in Adams, 1972) comments on Whorf's work saying that an underlying assumption of these studies is that the individual's conception of the world is intimately related to the nature of his native language. Presumably, then, other languages will not match well with his world view.

It seems that one can expect variations of behaviour when using different languages. There is not full agreement as to the type and degree of variation, however. The variation may be due, according to Carroll (1964), to the fact that there is a more formal learning of the second language than the first language in that the learning is guided by conscious, deliberate effort and an application of rules and logic, in contradistinction to the natural acquirement of the native language.

Carroll (ibid.) further mentions a point made by other researchers - that abnormal mental states can influence both the form and the content of speech. For example, he states that in schizophrenia there is a disorganization of syntactical behaviour, a tendency to use idiosyncratic terms and a heightened lability of verbal association. This is a description from a linguist's point of view of schizophrenic thought disorder.

The question can now arise as to whether, in bilingual subjects, there is a differential effect of the two languages on thought disorder, i.e. is the thought-language connection so tight, that in disordered states as well as normal settings, different languages allow differing behaviours (symptoms) to be produced?

It appears possible to shed light on this query in a South African setting in view of two papers recently published in this country.

The first paper provides a clinical probability for the hypothesised behaviour to be observed. Hemphill (1971) studied the auditory hallucinations of bilingual South African

schizophrenics. He found that the hallucinations were reported to occur in one language only - the home language - and that mental performance was better in a non-home language, in that there were fewer, if any, symptoms shown. Non-schizophrenic hallucinations were, however, demonstrated sometimes in a variety of languages with the same subject. Hemphill postulated the following explanation to account for his findings:

> It is suggested that a defect of the system for verbal thought is implicated in the production of 'voices' in schizophrenia, involving the coding and processing of language (p. 1391).
> The extent to which the hallucinations are incomprehensible, puzzling and bizarre, is an indication of the degree of impairment of the process of verbalization of thoughts as well as of a possible underlying disorder of the thinking process (p. 1392).
> (The finding) that the less well established language was not affected ... suggests that the coding process for verbal thought was impaired in one language but intact in the other. It is therefore unlikely that a primary disorder of thinking in polyglot schizophrenia is responsible for the 'voice' hallucinations, as has been assumed in monoglot, otherwise it would be reproduced in both languages (p. 1394).

As a result of this study, it appears a likely area of research to establish whether the findings on hallucinations apply to other symptoms.

A methodological precursor to and prerequisite for the present study is the research carried out by McLaren and Beumont (1973). They aimed to consider three questions concerning performance on the Bannister-Fransella grid test of schizophrenic thought disorder in South Africa. Firstly, whether the use of the standard grid (in English) is validated in a South African setting; secondly, whether an Afrikaans

translation of the grid may be validly used; and thirdly, whether the norms on the English and Afrikaans grids closely approximate each other. All three aims were successfully achieved.

It is now possible to turn to the focus of the present research.

4. General Aims of the Present Study

Thought disorder has always been measured in terms of language use, as language is the main operational measure of thought possible. With the grid available in two languages, it is now possible to ascertain, with bilingual schizophrenic subjects, to what extent thought disorder is language-tied, i.e. is there a difference in Intensity and Consistency scores across languages and is this difference or lack of it maintained in comparison with control subjects?

The results of such research might also aid speculations concerning the various hypotheses advanced to account for schizophrenic thought disorder (see Section 1), in particular, the serial invalidation hypothesis. This latter might be elucidated either by comparing the language of supposed invalidation with a second language, or by measuring the effect of different validational experiences in the two languages, using grid methodology. Anything to be gained (or lost) diagnostically by the language comparison will also be assessed.

It is also hoped to gather further validation for Bannister's grid methodology, specifically in relation to the language hypothesis, both from within the paradigm - by comparison of the standardized grid with an elicited, more personalized grid (cf. McFadyen and Foulds, 1972) - and from without, i.e. against clinical criteria.

Further light may be thrown on the hypotheses relating to schizophrenic thought disorder and the language distinction by the following additional analyses:

(a) analysis of the elicited grids in terms of qualitatively assessing the constructs spontaneously used in the two languages, and

(b) assessing how much language proficiency per se contributes to any possible obtained difference between performance in first and second language.

Thus it is hoped to assess whether there are any language differences obtaining in schizophrenic thought disorder, to validate this assessment as far as possible and to isolate possible explanations for the phenomenon, or at least eliminate some erroneous explanations.

5. Formal Hypotheses

Hypothesis 1

Intensity and Consistency scores are significantly greater on the second language thought disorder grid than on the first language thought disorder grid for thought-disordered schizophrenics.

The rationale for this derives from the assumption that the schizophrenic experiences varying validational fortunes in the two languages and that he is more likely to experience invalidation in the language which he uses more frequently or in which his communications in the family and other close relationships are carried out.

Hypothesis 2

Intensity and Consistency scores are significantly greater on the second language elicited grid than on the first language elicited grid for thought-disordered schizophrenics.

The rationale for this derives from the assumption that the thought-disorder grid is a good predictor of the schizophrenic's day to day construing and that consequently performance on it will replicate performance on a grid tapping the personal construct system of the subject.

Hypothesis 3

Intensity and Consistency scores on the first and second language thought disorder grids for non-thought-disordered control subjects will not significantly differ.

This is hypothesized as a result of the assumption that there are far less significant invalidating experiences for normals in their daily living than there are for schizophrenics, and that there is no reason to assume that situations similar

to those for schizophrenics will obtain in the two languages.

Hypothesis 4

Intensity and Consistency scores on the first and second language elicited grids for non-thought-disordered control subjects will not significantly differ.

The rationale for this is similar to that for Hypothesis 2, in that it is assumed that performance on the standardized grid approximates spontaneous performance.

Hypothesis 5

There is a significantly greater number of categories or items of clinical thought disorder in a taped sample of talk in the first language than in the second language of thought-disordered schizophrenics as rated on a rating scale.

This would be a validation of the assumption that grid performance is a predictor of daily non-test performance from outside of Personal Construct Theory, i.e. against a clinical criterion. As the Bannister-Fransella grid has been validated against clinical criteria (Bannister 1960, 1962, 1966; Bannister, Fransella and Agnew, 1971) it is only planned now to validate the language distinction in this respect. It will only be done for schizophrenic subjects as there was no evidence of thought disorder in the speech of controls in either language.

Hypothesis 6

Constructs on the elicited grids of thought-disordered schizophrenics are not significantly more abstract on the first language than on the second language grid.

If there is a significant language difference on the thought disorder grid for the schizophrenic group, then qualitative analysis of spontaneously used constructs might

help to elucidate this phenomenon by providing some means for explaining the obtained differences in terms of the hypotheses for thought disorder outlined in the Introduction. If this hypothesis held true, the abstract-concrete hypothesis would be eliminated, allowing closer perusal of other hypotheses.

Hypothesis 7

Constructs on the elicited grids of thought-disordered schizophrenics are significantly less "psychological" in the second language grid than in the first language grid.

If schizophrenics
(a) perform more poorly when using "psychological" rather than "physical" material (Bannister and Salmon, 1966; McPherson and Buckley, 1970), due presumably to the fact that "psychological" material is more threatening being associated with invalidating experiences, and
(b) perform better in a second language,
this may be due to their using more "psychological" constructs in the first language. This would support Bannister's analysis in some aspects.

Hypothesis 8

Constructs on the elicited grids of non-thought-disordered control subjects are not significantly different qualitatively (in terms of abstractness or "psychological-ness") in the second language than the first language.

The rationale for this is similar to the rationale for Hypothesis 3.

Hypothesis 9

Proficiency per se in the two languages respectively is not significantly positively related to Intensity and Consistency scores on the Bannister-Fransella and elicited grids for

schizophrencs or controls.

The rationale for this is that it will be hypothesized that it is the validating or invalidating qualities of the languages or the experiences undergone through their media that is crucial, rather than fluency or proficiency per se. This factor should be eliminated before alternative hypotheses can be considered.

METHOD

1. Design

1.1 Summary

Ten thought-disordered schizophrenics and ten roughly matched control subjects, all somewhat bilingual with respect to English and Afrikaans, were assessed on the following measures:

(a) Wechsler-Bellevue vocabulary subtest in English and Afrikaans.
(b) Bannister-Fransella Grid Test of Schizophrenic Thought Disorder in English and Afrikaans.
(c) An elicited repertory grid in English and in Afrikaans.
(d) A taped sample of spontaneous talk in English and in Afrikaans (for schizophrenic subjects only).

The major variable investigated was the differential effect of first language and second language on the clinical phenomenon of thought disorder, operationally defined as looseness of construing.

Further variables investigated were: the effects of standardized, elicited or personalized, and clinical assessments of thought disorder, compared with respect to their effect on the latter; some qualitative aspects of construing, i.e. whether elicited constructs were "concrete"/"abstract", "psychological"/"descriptive"; and consideration of language proficiency as an important variable.

1.2 Rationale for Statistical Procedure

The data were in the main suitable for appraisal by techniques utilizing a comparison of group means.

The comparisons involving the Intensity and Consistency scores derived from experimental/control subjects, Bannister-Fransella/elicited grid, first language/second language (see Hypotheses 1 - 4) formed the material for three-way analyses of variance with repeated measures on two factors (languages and grids).

The comparisons involving the "concrete"/"abstract" and "psychological"/"descriptive" constructs derived from experimental/control subjects and first/second language (Hypotheses 6-8) formed the material for two-way analyses of variance with repeated measures on one factor (languages).

These statistical techniques are parametric, i.e. suitable for use with interval and ratio data. There is some preference among some researchers using grid techniques to utilize non-parametric statistics. However, in doing multiple comparisons there is some difficulty. According to Roscoe (1969), the non-parametric alternatives are not popular and are seldom extended to complex experimental designs. It is, nevertheless, possible to regard the data as interval and proceed with parametric statistics, as some researchers have done (e.g. Foulds et al, 1967a and b; Haynes and Phillips, 1973a; Kear-Colwell, 1973; McLaren and Beumont, 1973).

The analysis of variance is suitable because it provides a test for the comparison of means in a multi-sample situation, where the repeated use of the t-test would involve a large Type I error. It is far more sensitive to differences in means than it is to violations of the assumptions of normality or homogeneous variance, assumptions exceedingly difficult to make in clinical research. In using samples of the same size, as in the present research, it is possible to somewhat ignore

these assumptions. The precision of the test with multiple dimensions is improved when matched samples are used, as has been attempted here.

The ratings of thought disorder derived from the taped sample of first and second language speech of the schizophrenic subjects (Hypothesis 5) were regarded as suitable for comparison by means of the Wilcoxon Matched-Pairs Signed-Ranks Test, a non-parametric test of the difference between means in two related samples (here, repeated measurements on the same subjects). This test was chosen as it was not felt that it could be comfortably assumed that the subjective judgements of thought disorder, even though based on an operational definition, were equivalent to interval data.

The attempt to exclude proficiency in language as a variable affecting grid performance (Hypothesis 9) utilized a number of one-way analyses of covariance with repeated measures. This means of statistical control is useful for removing the effects of an uncontrolled source of variation (here proficiency of language), according to Kirk (1968). Tests of significance of the analysis of covariance are said to be "robust" with respect to violation of the assumptions of normality and homogeneity of the residual variance (as with the analysis of variance). There is an added assumption of homogeneity of regression which is computable as a check. The test is appropriate if the effects eliminated by covariate adjustment are irrelevant to the main hypotheses. This is the case here, where proficiency of language is irrelevant to the hypothesis that the validating or invalidating aspects of the language are crucial and thus undesirable as an independent variable.

2. Techniques of Assessment (see Appendix)

2.1 Wechsler Vocabulary Subtest

This subtest has been an integral part of the Wechsler-Bellevue intelligence scale since 1941. In comparisons between the intercorrelations of the subtests of the Wechsler Adult Intelligence Scale respectively across different age groups, the vocabulary subtest has always had one of the highest correlations, i.e. ,75 and ,82. This points to the validity of using this measure as a predictor of full-scale intelligence. The reliability coefficient for the subtest in the two scales mentioned is ,88 and ,94 - ,96. The test-retest reliability with schizophrenic subjects is ,90. (Figures obtained from Matarazzo, 1972).

The South African version of the Wechsler-Bellevue provides equivalent English and Afrikaans versions of the subtest with equivalent norms for all age groups, thus rendering the test suitable as a predictor of bilingualism. It was standardized on a sample of approximately 3000 subjects, stratified by age, occupation, education and socio-economic status. Each of the standard scores for the subtests have themselves been normalized (Wechsler-Bellevue manual).

The subtest is here used as an approximate (approximate because it is recognized that performance can be affected by thought disorder in a negative manner) assessment of intellectual ability, necessary for the elimination of those subjects with IQs below 80 (Bannister and Fransella, 1966). Here a cutoff point of standard score 8 on first language vocabulary was used. The test is also used as an aid in determining the subjects verbal proficiency in the two languages and particularly for deciding the first language in doubtful cases.

2.2 Bannister-Fransella Grid Test of Schizophrenic Thought Disorder

This test has been described in the Introduction but a summary description of the technique used will be presented here.

The form of the grid used in the present investigation was standardized in 1966. Eight elements (four photographs of men and four of women) were ranked twice on six constructs - "kind", "stupid", "selfish", "sincere", "mean" and "honest". The total intercorrelations of the constructs for both grids provided the Intensity score, while a correlation of the ranked correlations of each grid provided the Consistency score.

According to Phillips (1975) there are a number of errors involved in the scoring prescribed in the 1966 manual. However, in a clinical investigation such as the present one, it would seem preferable to use the scoring methods with which the test was standardized, thus ensuring the use of similar cutoff points.

The 1966 standardization sample consisted of 188 male and female subjects in different diagnostic groups, with ages ranging from 17 - 60 and IQs as measured by the Mill Hill Vocabulary Scale of above 80. Thought-disordered schizophrenics were differentiated from other diagnostic groups using a cutoff point of 1000 on Intensity and ,49 on Consistency. Below these points lay 80% of the thought-disordered schizophrenics and 6,4% of the other subjects. The test's validity is thus shown by the high correlation between clinical diagnosis and grid scores.

Certain extraneous factors which might influence grid performance have been ruled out. These are: personality (Kear-Colwell, 1973); intelligence (Bannister and Fransella, 1966; Kear-Colwell, 1973); age (Bannister and Fransella, 1966; Kear-Colwell, 1973); sex (Bannister and Fransella, 1966; Kear-

Colwell, 1972); and social class (Kear-Colwell, 1973). The only limitations occasioned by these variables are those emerging out of the characteristics of the standardization sample - i.e. IQ must be above 80, and the age range excludes subjects below 17 years or above 60 years.

The Afrikaans version of the test (McLaren and Beumont, 1973) described in the Introduction, using the same elements and the constructs - "goedhartig", "onnosel", "selfsugtig", "opreg", "gemeen" and "eerlik", has been shown to have similar norms and validity measures as the Bannister-Fransella test. There were, in addition, no significant differences in scores found between English- and Afrikaans-speaking subjects respectively.

Both the English and Afrikaans versions were utilized to assess looseness of-construing in both languages.

2.3 Elicited Role Construct Repertory Grid Test

The technique used here was similar to the one elucidated by Kelly (1955) and outlined in the Introduction. Here the subject was given a role title list to elicit the elements. These were then presented to the subject in random groups of three in order to elicit spontaneous dichotomous constructs by comparing one role title with the other two - the triadic method. If this proved too difficult for the subject, interview data was utilized to form constructs.

The constructs, as far as possible, had to fulfil the following conditions (after McFadyen and Foulds, 1972):

(a) In the opinion of the tester it was possible to rank all the elements on the construct.

(b) If a construct appeared to the tester to be identical with one given previously, the subject was asked if this was so, and if so, the second construct was rejected.

The elements were then ranked on each construct to extract a sample of the subject's personal construct system. Eight elements and six constructs were elicited and the grid was administered twice in order to derive measures comparable to those of the standardized grid technique for assessing thought disorder.

In addition to the Bannister-Fransella scoring of the grid, an analysis of the type of construct elicited was made. As a result of inspection of the hypotheses advanced to account for schizophrenic thought disorder, the following categories were considered as possibilities: regressed, overinclusive, socially incommunicable, concrete, anxiety-provoking, loose, logically erroneous, literal, having social content, and their opposite poles.

The two categories which emerged as being:

(a) somewhat operationally definable, and

(b) applicable to the constructs elicited in the present study

were:

(i) Concrete/abstract
where concrete is taken to mean not mediated by discursive reasoning, dependent on the immediate claims of the object, situational, rigid, specific; and abstract to mean involving reasoning, awareness and self-account, detached from the immediately given, generalizable (after Goldstein and Scheerer, 1941).

(ii) Psychological/descriptive
where psychological was taken to be referring to personality-type or feeling-state characteristics, somewhat emotionally-laden; and descriptive to mean more physically-bound, impersonal, implying characteristics or activities not closely associated with feeling-states (after McPherson and Buckley, 1970).

It is recognized that the procedure for eliciting constructs ensured to some extent that the constructs were generalizable, however, it was still felt that it was possible to differentiate them on an abstract-concrete dichotomy. It is also true that the categories are not mutually exclusive, however, there appeared to be enough meaning invariance to render both categories useful.

The elicited constructs for all subjects - schizophrenic and control - in both languages were submitted to analysis and were assigned to one or the other pole of each category respectively.

An Afrikaans translation of the entire test was made by an experienced bilingual clinical psychologist.

The general technique of the repertory grid has been found useful as a clinical tool in many areas (e.g. Dean, 1955; Fransella and Adams, 1966; etc.).

2.4 Sample of Talk

A taped part of the testing interviews in both languages was used to provide a clinical measure of thought disorder. The measure of thought disorder was accomplished by rating the taped data according to the criteria laid down by Mayer-Gross, Slater and Roth (1969) and adopted by Bannister (1960, p. 1230). (See Introduction.)

A 1 - 5 rating scale procedure was adopted as this was felt to be the most convenient and manageable. It was derived from assessing the presence or absence of the eight categories of thought disorder (see pp. 1 - 2) in the following way:

presence of	0 - 1	categories	= rating of 0
"	" 2	"	= " " 1
"	" 3	"	= " " 2
"	" 4	"	= " " 3
"	" 5 - 8	"	= " " 4

The number of types of thought disorder was used in place of a frequency count of thought-disordered items as the length of the taped data on each subject and the amount of talk in each case were not considered comparable enough for the latter measure to be meaningful.

3. Subjects

3.1 Schizophrenic subjects

The ten subjects were selected according to the following criteria:

(a) They were patients in a mental hospital who were diagnosed by the responsible psychiatrist as schizophrenic with possible thought disorder.

(b) They were usually relatively new admissions, or if in-patients of longer standing, they were only tested if considered able to communicate reasonably well without showing gross signs of institutionalization and social deterioration.

(c) They were between the ages of 17 - 60 years, and reported to be reasonably bilingual South Africans with respect to English and Afrikaans.

(d) It was impossible to select Ss who were not receiving any medication or treatment at the time of testing. The only control utilized for this factor was that testing in both languages was carried out at the same stage of treatment, i.e. without a long time interval between tests (usually a day, never more than a week).

(e) Ss with any history of organic impairment were in the main excluded. However, two Ss who might have shown some impairment (with an alcoholic and an epileptic history, respectively), were included on the basis of negative EEG findings and scores showing no organic impairment of intellectual functioning on the Graham-Kendall Memory for Designs Test (Graham and Kendall, 1960). The reliability and validity coefficients for this test compare favourably with other tests of this nature.

(f) Psychiatric diagnosis was not the major criterion for inclusion because of the possibility of contamination of this criterion. Thus Ss who were not thought-disordered on their first language Bannister-Fransella test were excluded.

3.2 Control Subjects

The ten Ss were selected according to the following criteria:

(a) They were normal Ss without any psychiatric history of their own or psychiatric illness in close relatives, who were selected from a population of nurses, students not studying psychology (and hence not familiar with the tests used) and acquaintances of the author.

(b) They were between the ages of 17 and 60 and reported to be reasonably bilingual South Africans with respect to English and Afrikaans.

(c) There was no history of organic impairment.

(d) An attempt was made to select a sample with a similar distribution to the experimental sample with respect to age, sex and educational levels. Precise matching on these variables and first language was not considered necessary as a result of the literature previously quoted (Bannister and Fransella, 1966; Kear-Colwell, 1972, 1973; McLaren and Beumont, 1973). Ss were matched with schizophrenic Ss according to race (White or Coloured) as this was a variable not previously investigated.

(e) Ss were excluded if found to be thought-disordered on their first language Bannister-Fransella test.

(f) Ss with IQs below 80 as assessed by their first language Wechsler Vocabulary subtest were excluded.

Table 2

Some Characteristics of the Samples

Schizo-phrenic Ss	Age	Sex	Race	Educational Level	First Language	IQ Equivalent
1	20	M	W	Std. 10	English	95
2	35	M	W	NTC III	English	100
3	58	F	W	Std. 10	English	110
4	18	M	W	1st yr. univ.	English	95
5	48	F	C	1st yr. univ.	English	90
6	18	M	C	1st yr. univ.	English	100
7	41	M	W	Std. 8	Afrikaans	95
8	35	M	C	Std. 8	Afrikaans	80
9	52	F	C	Std. 6	Afrikaans	85
10	21	F	W	Std. 10	English	85
	Mean: 34,6 Std. dev: 14,55	M: 6 F: 4	W: 6 C: 4	Mean: ± Std. 10	English: 7 Afrikaans: 3	Mean: 93,5 Std. dev: 8,38

Table 2 continued

Control Ss	Age	Sex	Race	Educational Level	First Language	IQ Equivalent
1	17	M	C	Std. 6	Afrikaans	85
2	46	M	W	Std. 8 and nursing	Afrikaans	90
3	23	M	W	4th yr. univ.	English	110
4	24	F	W	Teaching dip.	English	125
5	24	F	W	3rd yr. univ.	English	145
6	23	M	W	4th yr. univ.	English	120
7	42	M	W	Std. 10 and nursing	Afrikaans	135
8	27	F	C	Std. 10 and nursing	Afrikaans	120
9	24	F	C	Std. 10 and nursing	Afrikaans	110
10	35	M	C	Std. 10	English	125
	Mean: 28,5 Std. dev: 8,89	M: 6 F: 4	W: 6 C: 4	Mean: ± 2 yrs. post matric	English: 5 Afrikaans: 5	Mean: 116,5 Std. dev: 16,38

The samples were rather small as a result of the following factors:

(a) The strict criteria for inclusion in the samples necessitated the testing of quite a large number of Ss before an uncontaminated sample could be formed.

(b) The amount of testing required a minimum of three hours to be spent with each individual S.

It is recognised that in small sample research the power of the statistical test is reduced and there is a consequent increase in the probability of a Type II error. However, in clinical research, this type of methodological problem has to be weighed up against others, e.g. the depth of the study, etc.

4. Procedure

Ss were told that they were to take part in a research project to investigate how people performed on tests in their first and second languages and that part of the testing sessions was to be taped. Standard administration procedures for the various tests was followed and the order of administration of the tests was as outlined above (see Design). There was one testing session for the first language and a separate testing session for the second language. Scoring procedures as outlined previously were carried out.

The experimenter-effect was controlled for by having the same person administer the English and Afrikaans tests respectively. The English-speaking author administered the English tests and an Afrikaans-speaking psychologist administered the Afrikaans tests.

It was hoped to control for carry-over from the first testing to the second testing by means of the following factors:

(a) The testers were different people who used only the designated language in the session and exhorted the Ss to do the same.

(b) There was a minimum of approximately five hours interval between the two language testings.

(c) The sequence of first-language and second-language testings was counterbalanced for all Ss according to the ABBA method. I.e. S_1 was tested first in his first language; S_2 was tested first in his second language; and so on.

First language was defined as the home language of the S, i.e. the language of communication in the home and the language used most frequently by the S.

Due to the necessity of testing first with the Bannister-Fransella grid test because of the selection criteria, it was not possible to counterbalance the administration of the standard and elicited grids, thus sequence effects here were not

controlled for.

The taped data for the schizophrenic Ss was rated according to the criteria previously quoted; and the constructs were categorized as previously outlined.

The relevant statistical procedures were applied to the data.

RESULTS

The following tables summarize the main scores and responses obtained from all the Ss on the measures employed. Table 3 gives the scores in both first and second language for the vocabulary subtests; for Intensity (I) and Consistency (C) on the Bannister-Fransella (B-F) grid and the elicited (E) grid; and for the schizophrenic Ss the ratings of thought disorder (TD) obtained from the taped data. Table 4 lists the constructs elicited in both first and second language for each S and their respective qualitative ratings - abstract (A)/ concrete(C) and psychological (P)/descriptive (D).

Table 3

Summary of Vocabulary Scores, Grid Scores and Thought Disorder Ratings for all Ss

Schizophrenic Ss	1st lang. vocab. std. score	2nd lang. vocab. std. score	1st lang. B-F grid I	1st lang. B-F grid C	2nd lang. B-F grid I	2nd lang. B-F grid C	1st lang. E grid I	1st lang. E grid C	2nd lang. E grid I	2nd lang. E grid C	TD ratings[a] 1st lang.	TD ratings[a] 2nd lang.
1	9,5	9,0	719	-,06	991	-,51	579	,94	594	,72	2	1
2	10,0	10,0	804	,24	1372	,78	824	,80	524	,66	3	1
3	11,0	10,5	935	,48	1952	,59	502	,02	2237	,64	0	0
4	9,5	9,5	562	,485	561	,14	728	,78	621	,14	1	0
5	9,0	9,0	446	,34	666	,73	523	,18	561	,08	4	2
6	10,0	10,0	586	,39	993	,79	953	,60	526	,68	0	0
7	9,5	5,0	363	,18	820	,30	563	,04	408	-1,02	2	1
8	8,0	6,5	903	,07	841	,64	711	,68	1456	,66	1	0
9	8,5	7,5	735	,32	1289	,17	776	,55	1093	-,17	3	2
10	8,5	8,5	554	,08	340	-,29	687	,99	617	,15	4	2

[a] See Table A (Appendix) for actual categories from which ratings were derived.

Table 3 continued

Control Ss	1st lang. vocab. std. score	2nd lang. vocab. std. score	1st lang. B-F grid		2nd lang. B-F grid		1st lang. E grid		2nd lang. E grid	
			I	C	I	C	I	C	I	C
1	8,5	5,5	1036	,15	988	,75	1327	,77	1307	,99
2	9,0	6,0	1999	,65	1246	,74	1074	-,18	1032	,69
3	11,0	10,5	1565	,91	1780	,86	852	,53	1312	,86
4	12,5	11,0	1926	,74	1783	,79	605	,94	862	,83
5	14,5	10,5	1411	,86	1661	,93	1192	,99	1256	,02
6	12,0	12,0	902	,59	831	,65	848	,82	930	,79
7	13,5	10,5	2820	,84	2435	,63	1930	,93	2107	,96
8	12,0	12,0	977	,61	1055	,82	820	,77	1167	,89
9	11,0	9,0	1687	,95	1582	,88	986	,70	1164	,34
10	12,5	11,5	985	,86	1004	,83	555	,74	560	,82

Table 4

Constructs Elicited in Both Languages and their Qualitative Ratings

Schizophrenic Ss	1st language elicited constructs	Qualitative ratings A/C	Qualitative ratings P/D	2nd language elicited constructs	Qualitative ratings A/C	Qualitative ratings P/D
1	Understands me	C	P	Goedhartig	A	P
	Artistic	A	P	Kannie 'n job hou nie	A	P
	Mean	A	P	Dominerend	A	P
	Fanatic about sport	C	D	Kunstig	A	P
	Likes the sea	C	D	Suksesvol	A	P
	Very consistent in in work	A	P	Sadisties	A	P
2	Having close family ties	C	D	Lief vir lees	C	D
	Interested in wild life	C	D	Hou van natuur	C	D
	Interested in flower photography	C	D	Het familieband	C	D
	Interested in jazz music	C	D	Hou van musiek	C	D
	Involved in conservation of flora and fauna	C	D	Hou van fotografie	C	D
	Interested in reading	C	D	Het vastigheid	A	P
3	Practical	A	P	Goedhartig	A	P
	Religious	A	P	Min wreed	A	P
	Having thought for others	A	P	Eensaam	A	P
	Interested in music	C	D	Prakties	A	P
	Outgoing	A	P	Opreg	A	P
	Sensitive	A	P	Musikaal	C	D
4	Very religious	A	P	Goedhartig	A	P
	In an enlightened state of consciousness	A	P	Godsdienstig	A	P
	Moderate	A	P	Kan goed kook	C	D
	Artistic	A	P	Skeppend	A	P
	Understanding	A	P	Prakties	A	P
	Unbalanced	A	P	Idealisties	A	P
5	Likes to "qualify on the stage" [a]	A	P	Geleerd	C	D
	Dark (in skin colour)	C	D	Ryk	C	D
	Well-dressed	C	D	Beskermende	A	P
	For politics	C	D	Prakties	A	P
	Sickly	C	D	Liefdevol	A	P
	Able to "prevent miscalculation"	A	P	Inmengende	A	P

[a] Quotes indicate idiosyncratic usage of words here.

Table 4 continued

Schizophrenic Ss	1st language elicited constructs	Qualitative ratings A/C	P/D	2nd language elicited constructs	Qualitative ratings A/C	P/D
6	Likes cleanliness	C	D	Onverskrokke	A	P
	Hardworking	A	P	Teruggetrokke	A	P
	Likes righteousness to be done	A	P	Goed geleerd	C	D
	Meticulous about housework	C	D	Doelgerig	A	P
	Softhearted	A	P	Saggeaard	A	P
	Cold, unsympathetic	A	P	Opreg	A	P
7	Vrolik	A	P	Religious	A	P
	Liefdevol	A	P	Soft	A	P
	Stil	A	P	Quiet	A	P
	Saggeaard	A	P	Secure	A	P
	Lief vir drank	C	D	Having a strong personality	A	P
	Afhanklik	A	P	Friendly	A	P
8	Gelowige	A	P	Gets upset	A	P
	Saggeaard	A	P	High-spirited	A	P
	Stil	A	P	Narrow-minded	A	P
	Vriendelik	A	P	Having a nasty manner	A	P
	Vernietigend	A	P	Soft	A	P
	Vrygewig	A	P	Religious	A	P
9	Swak	A	P	Believes in Christ	A	P
	Goed	A	P	Lives a "heavenly" life	A	P
	Selfstandig	A	P	Stands firm	A	P
	Gee goeie onderrig[b]	A	P	Worries about tomorrow	A	P
	Sorgsaam	A	P	Likes motor-cars	C	D
	Gelowig	A	P	Has something "to depend on"	A	P
10	Helpful to me	C	P	Kort	C	D
	Kind	A	P	Sorgsaam	A	P
	Nosy	A	P	Jaloers	A	P
	Free	A	P	Besig	A	P
	Protective	A	P	Lief vir musiek	C	D
	Giving	A	P	Vir my baie troos	C	P
	Mean A and P scores	4,2	4,3	Mean A and P scores	4,6	4,7

[b] Occasionally, as in this case, it is difficult to present the full flavour of the S's meaning and consequently the validity of the rating.

Table 4 continued

Control Ss	1st language elicited constructs	Qualitative ratings A/C	P/D	2nd language elicited constructs	Qualitative ratings A/C	P/D
1	Jaloers	A	P	Drinks	C	D
	Mooi	C	D	Kind to me	C	P
	Stil	A	P	Jealous	A	P
	Goed gemanierd	C	D	Interested in me	C	P
	Saggeaard	A	P	Afraid	A	P
	Vriendelik	A	P	Does not bother with other people	A	P
2	Godsdienstig	A	P	Friendly	A	P
	Pligsgetroue	A	P	Fond of sport	C	D
	Hulpvaardige	A	P	Likes housework	C	D
	Karaktervaste	A	P	Well-educated	C	D
	Vriendelik	A	P	Hardworking	A	P
	Oplettende	A	P	Religious	A	P
3	Undevious	A	P	Vriendelik	A	P
	Unreserved	A	P	Simpatieke	A	P
	Humane	A	P	Nederig	A	P
	Thrifty	A	P	Metodies	A	P
	Having humility	A	P	Intelligent	A	P
	Logical	A	P	Prakties	A	P
4	Having a strong personality	A	P	Onvriendelik	A	P
	Likes to tell people what to do	A	P	Hardkoppige	A	P
	Honest	A	P	Dink baie van self	A	P
	Obstinate	A	P	Het sterk persoonlikheid	A	P
	Having a sense of purpose and drive	A	P	Eerlik	A	P
	Having concern for other people	A	P	Uitgesproke	A	P
5	Domineering	A	P	Selfsugtig	A	P
	Having sensitivity	A	P	Kunstig	A	P
	Selfish	A	P	Vriendelik	A	P
	Goes out and does things	A	P	Het 'n harde kop	A	P
	Dishonest	A	P	Simpatieke	A	P
	Empty	A	P	Aktiewe	A	P
6	Having sincerity	A	P	Selfsugtig	A	P
	Selfish	A	P	Egosentries	A	P
	Kind	A	P	Introverte	A	P
	Stupid	A	P	Saggeaard	A	P
	Inconsiderate	A	P	Gedetermineerde	A	P
	Self-centred	A	P	Hardkoppige	A	P

Table 4 continued

Control Ss	1st language elicited constructs	Qualitative ratings A/C	P/D	2nd language elicited constructs	Qualitative ratings A/C	P/D
7	Onselfsugtig	A	P	Rigid	A	P
	Prakties	A	P	Loves people	A	P
	Verkrampte	A	P	Warm	A	P
	Lojale	A	P	Having regard for other people	A	P
	Warm	A	P	Unselfish	A	P
	Volwasse	A	P	Immature	A	P
8	Selfsugtig	A	P	Dependent	A	P
	Aanpasbare	A	P	Quick-tempered	A	P
	Vooruitstrewende	A	P	Passive	A	P
	Aggressiewe	A	P	Manipulative	A	P
	Teruggetrokke	A	P	Progressive	A	P
	Manipulerende	A	P	Warm	A	P
9	Goedhartig	A	P	Sensitive	A	P
	Fyngevoelig	A	P	Will not accept criticism	A	P
	Hardkoppig	A	P	Understanding	A	P
	Verstandig	A	P	Too kind	A	P
	Pligsgetroue	A	P	Having manners	C	D
	Suinige	A	P	Mixes easily	A	P
10	Open and honest	A	P	Openhartig	A	P
	Intelligent	A	P	Hoog opgevoede	C	D
	Generous	A	P	Kort van draad	A	P
	Short-tempered	A	P	Goedhartig	A	P
	Unfaithful	A	P	Inspirieus	A	P
	Educationally well-qualified	C	D	Briljant	A	P
	Mean A and P scores	5,7	5,7	Mean A and P scores	5,2	5,4

In order to statistically evaluate Hypotheses 1 - 4 three-way analyses of variance with repeated measures on two factors (grids and languages) were carried out for I and C scores respectively. The obtained F ratios were sufficiently significant to warrant further analysis. Consequently, tests of the relevant simple effects were carried out. The check on homogeneity of variance (F max) showed that this assumption was valid.

With regard to Hypothesis 1

The simple simple main effects of language were significant with respect to the I scores of the thought-disordered schizophrenics on the B-F grid.
The mean I score for the first language (660,7) was lower than that for the second language (982,5).
$F = 6,36056$ (df: 1,31), $p < ,05$.
This direction was as expected.
The simple simple main effects of language were not significant with respect to the C scores of the thought-disordered schizophrenics on the B-F grid.
$F = ,391244$ (df: 1,32).
The trend was, however, as expected, with the mean C score for the first language (,2525) being lower than that for the second language (,334).

With regard to Hypothesis 2

The simple simple main effects of language were not significant with respect to the I scores of the thought-disordered schizophrenics on the E grid.
$F = 1,97019$ (df: 1,31).
The trend was, however, as expected, with the mean I score for the first language (684,6) being lower than that for the second language (863,7).
The simple simple main effects of language were significant with respect to the C scores of the thought-disordered schizophrenics on the E grid.

The mean C score for the first language (,558) was higher than that for the second language (,254).
F = 5,44358 (df: 1,32), p < ,05
This direction was not predicted.

With regard to Hypothesis 3

The simple simple main effects of language were not significant with respect to the I scores of the control Ss on the B-F grid.
The mean I score for the first language (1530,8) was not significantly different from that for the second language (1436,5).
F = ,546039 (df: 1,31).
This was as predicted.
The simple simple main effects of language were not significant with respect to the C scores of the control Ss on the B-F grid.
The mean C score for the first language (,716) was not significantly different from that for the second language (,788).
F = ,305361 (df: 1,32).
This was as predicted.

With regard to Hypothesis 4

The simple simple main effects of language were not significant with respect to the I scores of the control Ss on the E grid.
The mean I score for the first language (1018,9) was not significantly different from that for the second language (1169,7).
F = 1,39679 (df: 1,31).
This was as predicted.
The simple simple main effects of language were not significant with respect to the C scores of the control Ss on the E grid.
The mean C score for the first language (,701) was not significantly different from that for the second language (,719)
F = ,0190710 (df: 1,32).
This was as predicted.

In order to statistically evaluate Hypothesis 5 the

Wilcoxon Matched-Pairs Signed-Ranks Test was carried out to compare the ratings of thought disorder in the first language with those in the second language for thought-disordered schizophrenics, as derived from the taped samples of talk.

With regard to Hypothesis 5

For each S the first language rating was placed ahead of the second language rating (see Table 3), giving T = 0 (N = 10, 1-tailed test), $p < ,005$.
Ratings in the first language were significantly greater than in the second language.
This was as predicted.

In order to statistically evaluate Hypotheses 6 - 8 two-way analyses of variance with repeated measures on one factor (languages) were carried out for abstract (A) and psychological (P) constructs respectively. The obtained F ratios were not sufficiently significant to warrant further analysis. However, tests of the relevant simple effects were carried out in order to obtain the lower level data referring to the specific hypotheses. Again F max showed that the variance was sufficiently homogeneous.

With regard to Hypothesis 6

The simple effects of language were not significant with respect to the A scores of the thought-disordered schizophrenics. The mean A score for the first language (4,2) was not significantly different from that for the second language (4,6).
$F = ,996443$ (df: 1,36).
This was as predicted.

With regard to Hypothesis 7

The simple effects of language were not significant with respect to the P scores of the thought-disordered schizophrenics. The mean P score for the first language (4,3) was not signifi-

cantly different from that for the second language (4,7).
F = 1,17549 (df: 1,36).
This was not as predicted.

With regard to Hypothesis 8

The simple effects of language were not significant with respect to the A scores of the control Ss.
The mean A score for the first language (5,7) was not significantly different from that for the second language (5,2).
F = 1,55709 (df: 1,36).
The simple effects of language were not significant with respect to the P scores of the control Ss.
The mean P score for the first language (5,7) was not significantly different from that for the second language (5,4).
F = ,661152 (df: 1,36).
These results were as predicted.

In order to statistically evaluate Hypothesis 9 one-way analyses of covariance with repeated measures were carried out. Each analysis of covariance partialled out the effects of proficiency, in both first and second language, on I and C scores in both languages for both groups of subjects (schizophrenic and control) on both grids (B-F and E). The check on homogeneity here showed that this assumption was reasonably valid.

With regard to Hypothesis 9

No significant effects were achieved by partialling out the effect of language proficiency except in one case.
For schizophrenic Ss on the B-F grid, without adjustment for language proficiency, there was a significant difference between first language I scores and second language I scores, with the latter being greater, as predicted by Hypothesis 1.
F = 7,93318 (df: 1,9), $p < ,05$.
When adjustments were made for the effects of language proficiency, there was no significant difference between the I

scores in the two languages.
F = 4,42233 (df: 1,8).
Thus it appears that language proficiency was a significant covariate, i.e. it played a part in the increase in I scores from first language to second language. However, on perusal of the relevant mean scores for language proficiency and I, it was found that as language proficiency decreased (9,35 in first language to 8,55 in second language), so I scores increased (660,7 in first language to 982,5 in second language). Thus the obtained significant relationship between language proficiency and I scores was a negative and not a positive one. This finding did not disprove the hypothesis that there would be no significant positive relationship between the two factors. Thus in most cases language proficiency was not a significant covariate and even where it was significant, the direction of significance did not disprove the hypothesis.

DISCUSSION

1. Evaluation of the Results in Terms of the Formal Hypotheses Proposed for the Present Study

Personal Construct Theory has made available methods for investigating the cognitive and phenomenal world of the schizophrenic in a manner similar to the way in which the world of the "normal" individual may be investigated. With its central construct as man the predictor, it has opened an avenue for predictions about schizophrenia, amongst many other phenomena, to be tested against reality.

It is now possible to turn to an evaluation of the predictions of the present study in terms of how they held up against reality as encountered in the testing situation.

Intensity scores were significantly greater on the second language thought disorder grid than on the first language thought disorder grid for thought-disordered schizophrenics as predicted. The results for Consistency were not statistically significant; however, the trend was in the expected direction.

Thus it appears that thought-disordered schizophrenics are more thought-disordered in their home language (possibly the language of invalidation) than in a second language, with their performance in the latter approaching that of normals. This holds more true for thought disorder in terms of disorganization of thinking than it does for the ability to replicate the pattern of thinking. Only two Ss showed a difference in both scores in the unpredicted direction. Examination of the taped data for these individuals showed that they had difficulty in maintaining set in their second language testing situation. It is probable that cross-translation was not well controlled for with respect to these Ss, and that this contributed to their scores.

The prediction that the same pattern of results would hold true for thought-disordered schizophrenics on an elicited grid

was not borne out by the results. It appears that performance on this technique evidences a slightly higher rate of disorganization in the first language together with a significantly better ability to replicate the pattern of thinking in the first language.

These results indicate a mismatch between the standardized Bannister-Fransella grid and a personalized elicited technique, i.e. some degree of invalidation of the technique within its own paradigm - Personal Construct Theory.

Control subjects did not evidence significantly differential performances with respect to Intensity and Consistency on the Bannister-Fransella grid in the two languages.

Thus it appears that the structure of construing is not different for normals in their home language as compared to a second language, i.e. there are possibly no differential validating or invalidating experiences in the two languages, in Personal Construct Theory terms.

A similar pattern of results held true for the control subjects on the elicited grid in the two languages. Here performance on the standardized grid did approximate more spontaneous performance as would be expected if the Bannister-Fransella grid were a valid technique.

The taped data from the schizophrenic Ss evidenced a significantly greater number of categories of thought disorder in the first language than in the second language.

These results confirm the basic language hypothesis while at the same time validating the standardized grid technique against a non-psychometric, clinical criterion in that the pattern of results obtained via the two media is similar.

With regard to the elicited constructs of the thought-disordered schizophrenics, there was no significantly different

frequency of abstract constructs in the two languages.

This result indicates that in this case the abstract-concrete distinction does not provide an explanation for the obtained differences in the performance in the two languages on the Bannister-Fransella grid.

There was, in addition, no significant difference between the frequency of psychological-type constructs in the two languages for the schizophrenic Ss.

It thus appears that the hypotheses utilizing a psychological-descriptive/physical type of distinction, including Bannister's (cf. Bannister and Salmon, 1966) also do not advance an explanation for the obtained differences in grid performance. However, it must be remembered that the results for I and C scores on the elicited grids of thought-disordered schizophrenics in the two languages were not as predicted. This may well tie up with the lack of obtained differences in the quality of constructs in the two languages.

In addition, an unreported result showed that there was a significant overall difference between the frequency of psychological and abstract constructs for thought-disordered schizophrenics and normals, with the latter showing greater frequencies. This result somewhat validates the two hypotheses concerning thought disorder, although it bears no reference to the language distinction.

There was no qualitative difference, with regard to abstract or psychological characteristics, between the constructs in the two languages of control Ss.

This bears out the prediction in that it is hypothesized that any qualitative differences obtaining in the experiences in the two languages for schizophrenics would not obtain for normals. The results are in line with the two hypotheses concerning thought disorder referred to above.

Language proficiency was mostly non-significant with respect to affecting grid performance; and even where it was significant it did not contradict the other hypotheses in accounting for the performance, in that the relationship was negative and not positive. In other words, the results do not show that better grid performance is related to better language proficiency. This factor allows other alternative explanations for grid performance to be investigated.

It appears that the major hypothesis concerning the language distinction has been borne out. I.e. schizophrenics are less thought-disordered in their second language than they are in their home language. This result holds true for the Bannister-Fransella test, and is validated against clinical criteria, although not well validated against a criterion derived from the Personal Construct Theory paradigm. The differential language performance is not associated with proficiency in the respective languages. Thus alternative explanations may be sought. These alternative explanations will be elaborated and assessed below.

2. Methodological Considerations

The reliability and validity of the obtained statistical results are dependent on a number of factors. The problem of the power of a statistical test, dependent in part on sample size, has already been discussed (see Method). Experimental and statistical control procedures have been outlined (ibid.) and were carried out as far as was possible. The results are therefore held to be acceptable, bearing in mind the limitations of small samples.

The reliability and validity of the various standardized tests have been dealt with (ibid.). The validity of the B-F grid was further assessed in this study with regard to the language distinction. The pattern of results obtained on the B-F grid was similar to that obtained by clinical assessment, although not quite as statistically significant as the latter. However, it was not as similar to that obtained by elicited grid techniques. Thus the grid was not well validated in this respect within its own paradigm.

The author's own assessments - the assigning of constructs to various categories and the ratings of the taped data - remain for consideration.

The categorization of constructs has some construct validity in terms of the relevant theoretical propositions advanced to account for schizophrenic thought disorder. The reliability of the assignments of constructs to particular categories was assessed by having a second judge familiar with the operational definitions of the categories undertake the procedure blind; i.e. he was unaware of which constructs belonged to which subjects or which English constructs were associated with which Afrikaans constructs. The Pearson product-moment correlation coefficients of inter-rater reliability for first and second language abstract and psychological constructs ranged from $r = ,67$ to $,96$; (df: 18), two-tailed test, $p < ,01$ in all cases.

The fact that the statistical comparisons utilizing this data were non-significant may be due to theoretical considerations as will be discussed below. However, certain methodological problems may have contributed. Firstly, the categories themselves may not be mutually exclusive, thus causing difficulties in comparisons. Secondly, the fact that relatively few constructs were elicited from each subject in this study may have made qualitative distinctions difficult. Possibly more differentiation would have been facilitated by using a more exhaustive sample of the subjects' personal construct systems. Kelly (1955) proposes that a suitable number ranges from 20 to 30. However, this would have made direct comparisons with the B-F grid considerably more difficult and thus was not undertaken.

The clinical ratings of thought disorder were tightly tied to an operational definition. An assessment of inter-rater reliability was not undertaken due to the prohibitive length of the task and the difficulty involved in someone unfamiliar with the particular testing situation associated with the present study rating such variables as inappropriateness, etc.

It is assumed that the procedures comply with methodological prescriptions as far as possible. The greater part of the value of the procedures is seen to lie in their close connection with theoretical considerations and their consequent facilitation of the advancement of explanatory concepts.

3. Evaluation of Hypotheses Advanced for Schizophrenic Thought Disorder

> ... (C)onstruct validation and empirical scientific inquiry are closely allied. It is not simply a question of validating a test. One must try to validate the theory behind the test. Cronbach says that there are three parts to construct validation: suggesting what constructs possibly account for test performance, deriving hypotheses from the theory involving the construct, and testing the hypotheses empirically. This formulation is but a précis of the general scientific approach ....
>
> (Kerlinger, 1973, p. 461.)

A review of the psychometric results in terms of their contribution to theoretical considerations outlined previously (see Introduction) will now be undertaken.

The regression hypothesis advanced for explaining thought disorder was not considered clinically useful. It was also not deemed possible to apply any operational definition of regression to the present data in order to evaluate this proposition. However, if one were to consider childish or primitive thinking to be less abstract than advanced thinking (cf. Piaget's stages of cognitive development, Furth, 1969), then evidence for this will be evaluated together with the concrete-abstract hypothesis.

The nature of Cameron's hypothesis also precluded an analysis of the data derived from the present study in terms of its propositions. This hypothesis, too, as mentioned previously, has not stood up well to criticism. The same methodological problems apply to the testing of Chapman's hypothesis and Von Domarus's principle.

The abstract-concrete hypothesis was to some extent evaluated here by the analysis of the categorization of elicited

constructs. If, as Goldstein and Scheerer (1941) maintain, it is the abstract attitude which is impaired in schizophrenia, the results support this contention in that schizophrenic Ss were found to produce fewer abstract constructs than normal Ss. The hypothesis, however, was of little value in explaining the differential performance of schizophrenic Ss in the two languages, in that they were not significantly more abstract in the less disturbed language. Whether the so-called impairment of abstract attitude is due to a cognitive disability or a social communication disability, as maintained by Chapman, cannot be evaluated here.

Mednick's hypothesis can only be evaluated in terms of the present results, if the assumption that psychological-type material is more anxiety-provoking than more impersonal material is made. If the assumption is acceptable, the analysis of the categorization of elicited constructs is of value. A similar formulation applies to the social content and thinking hypothesis. This is dealt with below.

The organic hypothesis, if interpreted in terms of the abstract-concrete dimension, can be assessed together with the latter. If however, in terms of this hypothesis, schizophrenia is seen as developing out of aetiologically prior neuronal damage, there is no possibility, within the framework of the present research, of accounting for why the neurons associated with production of the home language should be more impaired than those associated with the second language, if in fact such a formulation is even hypothetically possible.

The analysis of the categorization of the elicited constructs in terms of the psychological-descriptive dimension is applicable to an evaluation of Bannister's hypothesis. The proposals, that loosening of construing occurs in relation to interpersonal construing, the area of maximal invalidation (Bannister and Salmon, 1966), and that schizophrenics are less thought-disordered when construing in terms of physical or objective criteria rather than psychological criteria (McPherson

and Buckley, 1970), are of relevance here. The finding that thought-disordered schizophrenics used significantly fewer psychological-type constructs than normal controls supports these proposals somewhat. It also lends support to the social content and thinking hypothesis and a particular interpretation of Mednick's hypothesis as discussed above. However, the analysis of constructs did not provide any explanation for the language distinction. It is possible that the prior administration of the B-F grid in some way cued subjects to the fact that they were required to use psychological-type constructs in both languages, thus obviating any significant differences between languages. If this were so, it might in addition, have contributed to the fact that no significantly differential language performance in the proposed direction was found for schizophrenics on the elicited grid.

The obtained differential performance in the home language as compared to a second language on the Bannister-Fransella grid with thought-disordered schizophrenics may also be seen to support Bannister's serial invalidation hypothesis if viewed in a particular light. The first language is assumed to be firstly, the language of communication in the family and close interpersonal relationships, and secondly, the language most frequently spoken by the subject. Thus it would seem to logically follow that it would be the primary language via which invalidating instances are experienced in interpersonal communication settings. This appears, in the light of the present results, to have some validity as an explanation for the obtained differences. Such an interpretation would also lend some support to the hypotheses of Bateson, Lidz and Laing and Esterson.

It is possible to hypothesize that the use of a second language requires more deliberation than a first language and that this may account for more controlled or improved performance in a second language (cf. Carroll, 1964). This hypothesis does not appear an easy one to test and does

not detract from the ability of Bannister's hypothesis to account for the data.

Thus we have some support for Bannister's interpretation of the development of schizophrenic thought disorder, together with tentative support for a cognitive deficit hypothesis, a behaviouristic hypothesis, a social hypothesis and a family-analysis-oriented hypothesis. The support derives from the ability of the above hypotheses to conceptually explain the results of the present study. In addition, it must be remembered that other hypotheses, e.g. the organic hypothesis, due to the inapplicability of their use here, have not been in any way effectively ruled out.

It has not been possible to arrive at any one theory of schizophrenic thought disorder by the method of exclusion of all others. This is possibly a rather ambitious task with improbable outcome. Bannister's approach does consistently account for the greater body of the findings in terms of the predictions based on its theoretical postulates. However, in terms of the views of Feyerabend (1965, 1970) and Kelly's own postulates, one should tolerate ambiguity and contrive to hold alternative explanations under consideration, in order to counteract the dogmatism of accepting one theory together with all its untested and possibly erroneous predictions. According to Royce (1967, p.22) "... man needs to invoke all the available ways of knowing for the best possible grasp of the world". The results bear out the validity of Bannister's approach to some extent together with the validity of the assertion of many theorists that schizophrenia is a multi-faceted phenomenon and requires a multi-faceted approach.

4. Evaluation of the Language Distinction and Implications for Clinical Practice

The differential language performance found amongst thought-disordered schizophrenics on standardized psychometric and clinical assessments has implications beyond those related to theoretical approaches to thought disorder.

Firstly, there are implications for the controversy associated with the connection between language and thought. An in-depth analysis of this issue belongs to the realm of cognitive psychology and is beyond the scope of the present study. However, it is possible to make some superficial comments pertaining to the issue. It has been shown that a disorder of thought is differentially manifested via different language media. The disorder of thought here referred to is not as obviously tied up with language as Hemphill's (1971) "voice" hallucinations were. He proposed that "the coding process for verbal thought was impaired in one language but intact in the other" (p. 394). He maintained that if a disorder of thinking was primarily involved in these hallucinations, they should occur in both languages. He was obviously assuming to some extent identity of thought and language. The present study shows that a primary disorder of thinking does not manifest itself equally in both languages. This might be taken to indicate a lack of identity between thought and language and to alternatively propose that there is a rather complex inter-relationship between the two which are in some ways independent of each other. This would endorse the position of such theorists as Piaget, the Würzburg school, Ryle, etc. (see Introduction).

The second set of implications arising out of the language distinction concerns practical clinical considerations.

If assessment procedures, both clinical and psychometric, tap different performance levels in different languages, attention will have to be paid to the language in which

assessment is conducted . This becomes of primary importance in a multi-lingual society such as South Africa. The professional in a clinical setting will have to use the home language of the patient rather than his own language of preference for thorough assessments. As a result of the present research and that of Hemphill (op. cit.) it is apparent that unless such a procedure is undertaken, certain symptoms may elude observation.

If performance is more realistic and more "normal" in a second language, this minor language may prove useful in rehabilitative and psychotherapeutic endeavours. Approaching the patient via the communication medium of the minor language may provide him with increased skills by virtue of a decrease in associations with invalidation and consequent tighter construing, in Bannister's terms; an increase in deliberation and the application of logical rules, in Carroll's terms; a more concrete approach, in Goldstein and Scheerer's terms; or subjection to less anxiety-provoking stimuli, in Mednick's terms, and so forth.

The primary aim of all investigations of clinical phenomena is directed at the promulgation of improved detection and consequent treatment methods. It seems unlikely that any detrimental effects will accrue as a result of careful attention being paid to the language of assessment and the language of treatment, and likely, in terms of the present research, that such attention might prove beneficial. At our present stage of knowledge regarding clinical phenomena, all possible avenues should be explored. Only future research can tell whether such precautions will bear any fruitful therapeutic results.

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APPENDIX

Wechsler Vocabulary Subtest (English form)

Name:_____ Home language:_____ Date and time :_____

Word	Meaning	Score
1. Apple		
2. Donkey		
3. Join		
4. Diamond		
5. Nuisance		
6. Fur		
7. Cushion		
8. Knuckle		
9. Gamble		
10. Bacon		
11. Nail		
12. Tint		
13. Armoury		
14. Nitroglycerine		
15. Fable		
16. Brim		
17. Guillotine		
18. Cedar		
19. Plural		
20. Espionage		
21. Hara Kiri		
22. Microscope		
23. Ballast		
24. Belfry		
25. Recede		
26. Imminent		
27. Secluded		
28. Affliction		
29. Vesper		
30. Pewter		
31. Catacomb		
32. Spangle		

Wechsler Vocabulary Subtest (English) continued

Word	Meaning	Score
33. Mantis		
34. Chattel		
35. Stanza		
36. Flout		
37. Dilatory		
38. Proselyte		
39. Aseptic		
40. Amanuensis		
41. Moiety		
42. Traduce		

Raw score:	
Std. score:	
IQ equivalent:	

Wechsler Woordeskattoets (Afrikaans form)

Naam:_____ Huistaal:_____ Datum en tyd:_____

Woord	Betekenis	Punte
1. Appel		
2. Donkie		
3. Kastrol		
4. Brug		
5. Diamant		
6. Kussing		
7. Mompel		
8. Dobbel		
9. Kruik		
10. Spyker		
11. Kneukel		
12. Pels		
13. Aarsel		
14. Ontsier		
15. Nitrogliserien		
16. Legende		
17. Guillotine		
18. Meervoud		
19. Seder		
20. Mikroskoop		
21. Kremasie		
22. Hara-kiri		
23. Kwaksalwer		
24. Agenda		
25. Nering		
26. Gemenebes		
27. Oorvleueling		
28. Versmaai		
29. Skepties		
30. Kortwiek		
31. Felisiteer		
32. Kronologies		
33. Lagune		

Wechsler Woordeskattoets (Afrikaans) vervolg

Woord	Betekenis	Punte
34. Omset		
35. Guur		
36. Skrynerig		
37. Kwetsuur		
38. Montuur		
39. Nivelleer		
40. Lawine		
41. Gemelik		
42. Vadsig		

Raw score :	
Std. score:	
IQ equivalent:	

Bannister-Fransella Grid Test (English form)
(Worked Example)

Name: S_2 (TDS group) Home language: English Date and time: 20/2/75 2 p.m.

Record Sheet

Grid I

Constructs

RANKS	1. Kind	2. Stupid	3. Selfish	4. Sincere	5. Mean	6. Honest
1st	F	D	B	C	B	C
2nd	C	A	G	G	G	D
3rd	B	B	A	E	A	B
4th	E	E	F	B	F	E
5th	D	H	E	D	H	G
6th	G	C	H	F	D	F
7th	H	G	D	H	E	H
8th	A	F	C	A	C	A

Grid II

Constructs

RANKS	1. Kind	2. Stupid	3. Selfish	4. Sincere	5. Mean	6. Honest
1st	C	D	A	F	B	C
2nd	E	A	B	C	F	D
3rd	G	B	F	G	A	G
4th	D	C	G	B	H	E
5th	H	H	H	E	G	F
6th	F	E	E	D	D	B
7th	B	G	D	H	E	H
8th	A	F	C	A	C	A

Grid Test Analysis Sheet

(Worked Example for Grid on Previous Page)

Name: S2 (TDS group) Home language: English Language of test: English

Rank order tables compiled from record sheet

Grid I

ELEMENTS \ Constructs	1	2	3	4	5	6
A	8	2	3	8	3	8
B	3	3	1	4	1	3
C	2	6	8	1	8	1
D	5	1	7	5	6	2
E	4	4	5	3	7	4
F	1	8	4	6	4	6
G	6	7	2	2	2	5
H	7	5	6	7	5	7

Grid II

ELEMENTS \ Constructs	1	2	3	4	5	6
A	8	2	1	8	3	8
B	7	3	2	4	1	6
C	1	4	8	2	8	1
D	4	1	7	6	6	2
E	2	6	6	5	7	4
F	6	8	3	1	2	5
G	3	7	4	3	5	3
H	5	5	5	7	4	7

Construct Pair	Relationship Score	Rank
1-2 (122)	-20	15
1-3 (86)	0	7,5
1-4 (44)	23	4
1-5 (94)	-1	9
1-6 (36)	32	3
2-3 (58)	10	5
2-4 (112)	-11	12
2-5 (84)	0	7,5
2-6 (74)	1	6
3-4 (96)	-2	10
3-5 (6)	86	1
3-6 (118)	-16	13
4-5 (108)	-8	11
4-6 (20)	58	2
5-6 (120)	-18	14

Total: 286

Construct Pair	Relationship Score	Rank
1-2 (106)	-7	10
1-3 (158)	-77	14
1-4 (52)	14	4
1-5 (160)	-81	15
1-6 (14)	69	2
2-3 (88)	0	6,5
2-4 (136)	-38	11
2-5 (88)	0	6,5
2-6 (88)	0	6,5
3-4 (100)	-4	9
3-5 (10)	77	1
3-6 (152)	-66	13
4-5 (88)	0	6,5
4-6 (38)	30	3
5-6 (146)	-55	12

Total: 518

Intensity score (Grand Total): 804

Consistency score (Rho): ,2424

Bannister-Fransella Grid Toets (Afrikaans form)

Naam:_____ Huistaal:_____ Datum en tyd:_____

Antwoordblad

Grid I

Konstrukte

RANGE	1. Goedhartig	2. Onnosel	3. Selfsugtig	4. Opreg	5. Gemeen	6. Eerlik
1ste						
2de						
3de						
4de						
5de						
6de						
7de						
8ste						

Grid II

Konstrukte

RANGE	1. Goedhartig	2. Onnosel	3. Selfsugtig	4. Opreg	5. Gemeen	6. Eerlik
1ste						
2de						
3de						
4de						
5de						
6de						
7de						
8ste						

Role Title List (English form)

Name:_____ Home language:_____ Date and time:_____

Role titles	Element	
1. Your mother or the person who has played the part of a mother in your life.		A
2. Your father or the person who has played the part of a father in your life.		B
3. Your brother nearest your age. If you have no brother, the person who is most like one.		C
4. Your sister nearest your age. If you have no sister, the person who is most like one.		D
5. Your closest girl (boy) friend immediately before you started going out with your wife (husband) or present closest girl (boy) friend.		E
6. Your wife (husband) or closest present girl (boy) friend.		F
7. A person with whom you have been closely associated whom you dislike.		G
8. The person you have met within the past six months whom you would most like to know better.		H

Roltitel Lys (Afrikaans form)

Naam:_____ Huistaal:_____ Datum en tyd:_____

Roltitels	Elemente	
1. U moeder of die persoon wie die rol van 'n moeder in u lewe gespeel het.		A
2. U vader of die persoon wie die rol van 'n vader in u lewe gespeel het.		B
3. U broer wie die naaste in ouderdom aan u is. As u nie 'n broer het nie, die persoon wie die meeste soos 'n broer is.		C
4. U suster wie die naaste in ouderdom aan u is. As u nie 'n suster het nie, die persoon wie die meeste soos 'n suster is.		D
5. U beste vriend(in) net voor u begin rondgaan het met u vrou (man) of huidige beste vriend(in).		E
6. U vrou (man) of beste huidige vriend(in).		F
7. 'n Persoon wat u goed ken van wie u nie hou nie.		G
8. Die persoon wie u gedurende die laaste ses maande ontmoet het met wie u die meeste kennis wil maak.		H

Construct List (English form)
(Worked example)

Name: S2 (TDS group) Home language: English Date and time: 20/2/75 2 p.m.

Sort	Construct
1	Having close family ties.
2	Interested in wild life.
3	Interested in flower photography.
4	Interested in jazz music.
5	Involved in conservation of flora and fauna.
6	Interested in reading.

Konstrukte Lys (Afrikaans form)

Naam:_____ Huistaal:_____ Datum en tyd:_____

Sorteering	Konstruk
1	
2	
3	
4	
5	
6	

Elicited Grid (English form)
(Worked example)

Name: S_2 (TDS group) Home language: English Date and time: 20/2/75 2 p.m.

Record Sheet

Grid I

Constructs

RANKS	1. Having close family ties	2. Interested in wild life	3. Interested in flower photography	4. Interested in jazz music	5. Involved in conservation of flora and fauna	6. Interested in reading
1st	B	C	A	F	C	C
2nd	D	H	H	E	H	E
3rd	C	B	C	C	B	F
4th	A	A	B	H	A	H
5th	F	F	E	B	D	B
6th	H	G	D	D	F	A
7th	E	D	G	A	E	D
8th	G	E	F	G	G	G

Grid II

Constructs

RANKS	1. Having close family ties	2. Interested in wild life	3. Interested in flower photography	4. Interested in jazz music	5. Involved in conservation of flora and fauna	6. Interested in reading
1st	B	C	A	F	C	C
2nd	D	H	H	E	H	F
3rd	C	B	C	C	B	B
4th	A	A	B	H	A	A
5th	F	F	E	B	F	H
6th	H	D	D	D	D	E
7th	E	E	F	A	E	D
8th	G	G	G	G	G	G

Grid Test Analysis Sheet

(Worked example for grid on previous page)

Name: S2 (TDS group) Home language: English Language of test: English

Rank order tables compiled from record sheet

Grid I

ELEMENTS	Constructs 1	2	3	4	5	6
A	4	4	1	7	4	6
B	1	3	4	5	3	5
C	3	1	3	3	1	1
D	2	7	6	6	5	7
E	7	8	5	2	7	2
F	5	5	8	1	6	3
G	8	6	7	8	8	8
H	6	2	2	4	2	4

Grid II

ELEMENTS	Constructs 1	2	3	4	5	6
A	4	4	1	7	4	4
B	1	3	4	5	3	3
C	3	1	3	3	1	1
D	2	6	6	6	6	7
E	7	7	5	2	7	6
F	5	5	7	1	5	2
G	8	8	8	8	8	8
H	6	2	2	4	2	5

Construct pair		Relationship score	Rank
1-2	(54)	13	7
1-3	(64)	6	9
1-4	(86)	0	13
1-5	(34)	36	4,5
1-6	(82)	0	13
2-3	(34)	36	4,5
2-4	(78)	0	13
2-5	(10)	77	1,5
2-6	(56)	11	8
3-4	(100)	-4	15
3-5	(24)	50	3
3-6	(70)	3	10
4-5	(72)	2	11
4-6	(10)	77	1,5
5-6	(50)	16	6

Total: 331

Construct pair		Relationship score	Rank
1-2	(28)	45	6
1-3	(58)	10	11
1-4	(86)	0	14,5
1-5	(40)	27	8
1-6	(44)	23	9
2-3	(22)	55	4,5
2-4	(62)	7	13
2-5	(0)	100	1
2-6	(20)	58	2,5
3-4	(86)	0	14,5
3-5	(22)	55	4,5
3-6	(50)	16	10
4-5	(62)	7	12
4-6	(36)	32	7
5-6	(20)	58	2,5

Total: 493

Intensity socre (Grand Total): 824

Consistency score (Rho) : ,8

Elicited Grid (Afrikaans form)

Naam:_____ Huistaal:_____ Datum en tyd:_____

Antwoordblad

Grid I

Konstrukte

RANGE	1.	2.	3.	4.	5.	6.
1ste						
2de						
3de						
4de						
5de						
6de						
7de						
8ste						

Grid II

Konstrukte

RANGE	1.	2.	3.	4.	5.	6.
1ste						
2de						
3de						
4de						
5de						
6de						
7de						
8ste						

Table A

Categories of Thought Disorder present in Samples of Talk in First and Second Languages of Schizophrenic Subjects from which Ratings were Derived

Subject	First Language	Second Language
1	(a) (b) (d)	(a) (d)
2	(a) (d) (f) (h)	(a) (f)
3	(d)	(a)
4	(b) (d)	
5	(a) (b) (c) (d) (h)	(a) (d) (h)
6	(f)	
7	(d) (e) (f)	(d) (e)
8	(c) (f)	(c)
9	(a) (b) (c) (d)	(a) (b) (c)
10	(a) (b) (d) (f) (g) (h)	(c) (d) (f)

Note,- Letters refer to categories derived from Mayer-Gross, Slater and Roth (1969). (See pp. 1-2.)